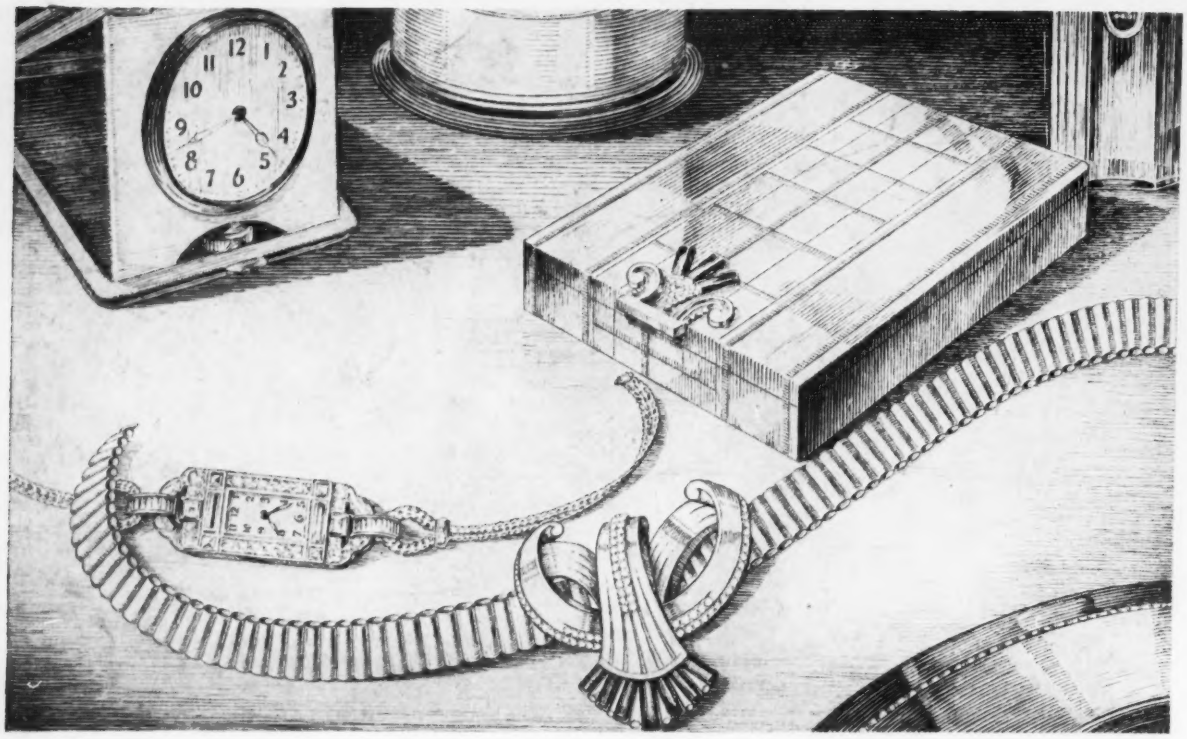
APRIL, 1939

Soap

and Sanitary Chemicals

INTERESTING USES OF ALKALIES



Shampooing Watch Dials with Bicarbonate of Soda

Leading watchmakers and manufacturing jewelers tell us there's nothing like bicarbonate of soda for cleaning the metal dials of fine watches. After the dials have come out of a cleaning solution of cyanide, the finish is improved by the gentle action of "bicarb" applied by dipping a wet brush into the powder and scrubbing the dial with it. Then the dial is rinsed with clean water and dried, either in clean boxwood sawdust or with absorbent cotton. Craftsmen also use bicarbonate of soda in jewelry and bronze shops after gilding an article. This use requires but a few pounds as compared with the total Bicarbonate of Soda production in this country of 140,000 tons per year. For such novel purposes, *as well as major markets*, COLUMBIA plays an important part in supplying the milling, baking and repacking industries with Bicarbonate of Soda; the soap, rayon, textile, oil refining and lye industries with Caustic Soda; the glass, soap and chemical industries with Soda Ash; the pulp and paper, textile and water purification industries with Liquid Chlorine; and many other industries with various products manufactured by COLUMBIA.

COLUMBIA

SODA ASH • CAUSTIC SODA • SODIUM BICARBONATE • • •
MODIFIED SODAS • LIQUID CHLORINE • CALCIUM CHLORIDE

THE COLUMBIA ALKALI CORPORATION
BARBERTON, OHIO
NEW YORK • CHICAGO • BOSTON • ST. LOUIS • PITTSBURGH • CINCINNATI • CLEVELAND • MINNEAPOLIS • PHILADELPHIA

A PLACE IN THE DRUG PICTURE

There are definite reasons why the Anchor Hocking line of P & P ware occupies a prominent place in the drug picture... and why Anchor Hocking will prove an excellent source of supply for you. The complete range of styles and sizes is one... you can find what you want, in the sizes you want. More important than that, however, is the quality of the glassware... the sparkle, the brilliance, the clean color, the strength and toughness, and the uniformity that is built into Anchor Hocking ware. The Narrow Mouth Rounds shown here are typical of our hundreds of styles suitable for all sorts of drugs, pharmaceuticals, and specialties. Tell us what products you pack and your desires in the way of a package and we will recommend suitable containers—*for greater sales.* ANCHOR HOCKING GLASS CORPORATION, Lancaster, Ohio.

COMPLETE PACKAGES

For best and surest results use Anchor Caps with Anchor Hocking containers. On the bottles above we show Anchor Improved C. T. Caps . . . but of course Anchor makes a wide range of styles for all products and purposes, metal or molded, decorated or plain.

ANCHOR HOCKING GLASS CAPS

-an unbeatable combination

Soap and Sanitary Chemicals

Volume XV
Number 4

APRIL
1939

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254 WEST 31st STREET NEW YORK, N. Y.

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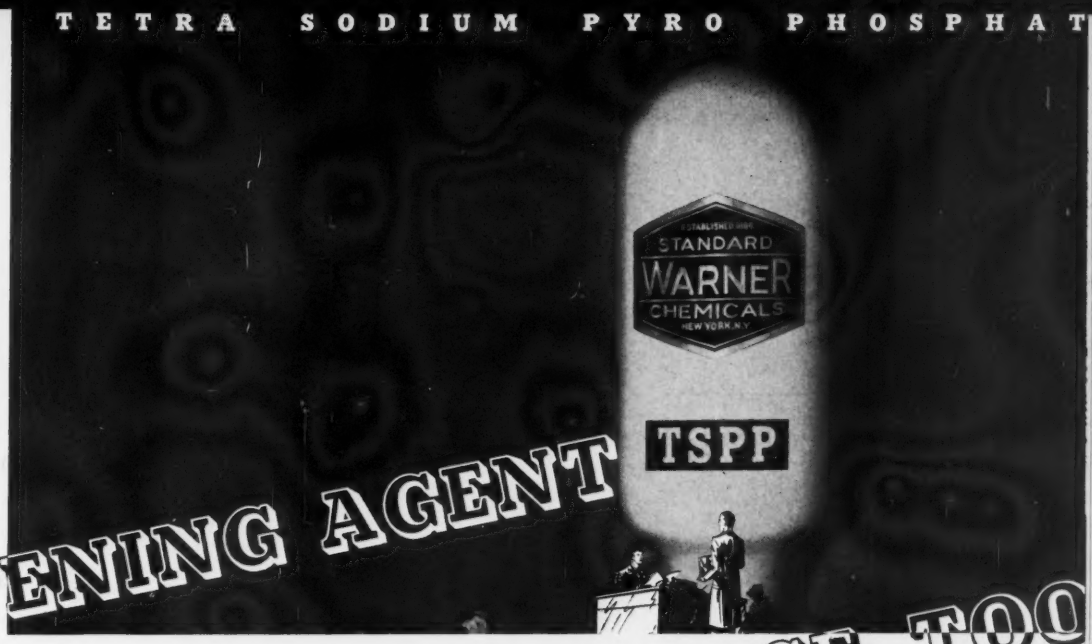
TETRA SODIUM PYRO PHOSPHAT



SOFTENING AGENT FOR SALES RESISTANCE, TOO

An outstanding characteristic of the newest of the phosphates—Tetra Sodium Pyrophosphate Warner—is its superior calcium sequestering power.

Another is its **sales intensifying power**—for products that are benefited by its properties as a Detergent, Soap Aid, Water Softener, Emulsifier, Deflocculant and Clarifying and Wetting Agent.

If you sell to household users, TSPP Warner puts more sales appeal into your soaps, powders and cleansers with new cleaning effectiveness plus the blandness of mild alkalinity. For your commercial customers who use detergents or process or manufacture with them, TSPP Warner strengthens your sales arguments with better, easier-to-get results as well as product protection and improvement.

Because of its concentrated detergent power, production costs with many formulas are no higher. In one of its three convenient forms—crystals, quick-dissolving, porous anhydrous granules or powder—TSPP Warner may be the agent to soften sales resistance and build sales volume for **your** products.

Tetra Sodium Pyrophosphate Warner has all of the properties of TSP and is used with generally superior results except in those few cases where higher alkalinity is required. Mixed with TSP, Sodium Metasilicate or Soda Ash, it considerably adds to their efficiency. TSPP Warner is manufactured under conditions of strict, uniform control. It has no Metaphosphate content and only traces of Orthophosphate.

We'll be glad to help you determine TSPP Warner possibilities in your own application. The facilities of our technical staff for data and consultation are at your disposal. An inquiry for samples or quotations will receive prompt response and strictly confidential handling.

OTHER WARNER DETERGENTS, SANITARY CHEMICALS AND SOLVENTS

CARBON BISULFIDE • CARBON TETRACHLORIDE • LIQUID CHLORINE
POTASH CAUSTIC • SNOWHITE • SODIUM HYPOCHLORITE SOLUTION
TRI SODIUM PHOSPHATE • TRICHLORETHYLENE

WARNER CHEMICAL COMPANY • DIVISION OF

WESTVACO CHLORINE PRODUCTS CORPORATION

The refreshing scent of Pine Forests has always held an appeal to the public.

A Pine soap or bath preparation so perfumed recalls vacation days. Gives a sensation of cleanliness and health.

For exquisite Pine Odors for Soaps and Cosmetics, **AGFA ISO BORNYL ACETATE** is an ideal base.

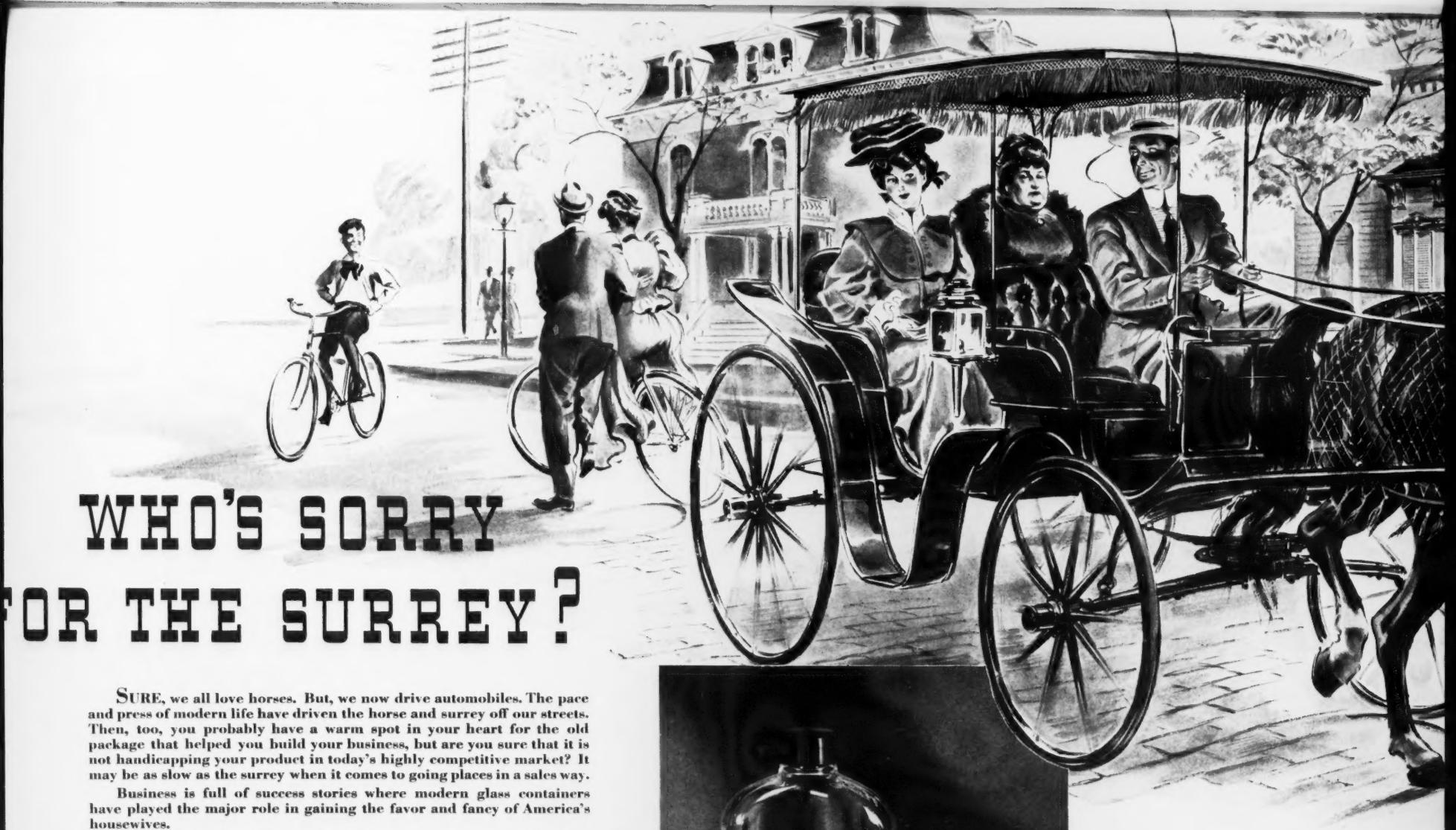
Special odors will be furnished by our laboratories on request.

Agfa

AGFA AROMATICS DIVISION

GENERAL DRUG COMPANY

170 Varick Street, New York, N. Y.
Transportation Bldg., Los Angeles, Cal.
9 South Clinton St., Chicago, Ill.
907 Elliott St. West, Windsor, Ontario



WHO'S SORRY FOR THE SURREY?

SURE, we all love horses. But, we now drive automobiles. The pace and press of modern life have driven the horse and surrey off our streets. Then, too, you probably have a warm spot in your heart for the old package that helped you build your business, but are you sure that it is not handicapping your product in today's highly competitive market? It may be as slow as the surrey when it comes to going places in a sales way.

Business is full of success stories where modern glass containers have played the major role in gaining the favor and fancy of America's housewives.

We believe it will prove worthwhile if you will put your problem before our Packaging Research Department. Your local Owens-Illinois representative will be glad to arrange this. No obligation is implied or entailed. Owens-Illinois Glass Company, Toledo, Ohio.

OWENS-ILLINOIS

"FIRST IN GLASS"

● Regardless of your problem or your product, Owens-Illinois is equipped to render intelligent cooperation in either designing an entirely new container or suggesting a stock design to meet your particular needs. Two examples of the unlimited possibilities of stock patterns are illustrated. The one on the left is the new Oval Brilliantine; on the right the Glamour Flaconette. The handsome caps are automold Lustreseals.

We will be glad to send you a reprint of the

Build Business on Quality Lines . . .

4 Liquid Floor Soaps

TO MEET YOUR CUSTOMERS' DEMANDS

DAVIES-YOUNG PRODUCTS

BUCKEYE LIQUID SCRUBBING SOAPS

(Plain, Pine or Sassafras.) For all surfaces that require a good NEUTRAL soap. Made from a combination of freshly pressed vegetable oils. Contain a high concentration of soap value. Leave no film on terrazzo or tile.

SANI-SCRUB LIQUID FLOOR SOAPS

(Plain, Pine or Sassafras.) Heavy-bodied liquid scrubbing soaps containing a slight excess of a modified alkali. Developed particularly for rubber, rubber tile, asphalt tile, composition, mastic and cement. Slight alkalinity not only gives increased cleaning action—but also prevents colors from running.

FLOREX (Pine or Sassafras)

Really a liquid detergent; carries a slight excess of modified alkalies. Lower in soap content than SANI-SCRUB; recommended for same type of floors.

EX-ALK LIQUID CLEANER

(Pine or Sassafras.) For all floors, and general purpose cleaning. It is non-alkaline, and neutralizes alkali, thus controlling the alkalinity of the cleaning solution. Heavy suds clean with gentle, thorough action, harmless to any surface that will stand washing with clear water.

Liquid floor soaps (scrubbing soaps) are widely used today because of their ease of handling, immediate and complete solubility in water, and effective cleaning properties. These four Davies-Young soaps are each specifically compounded for certain types of floors. (Buildings having more than one type of flooring often require several different cleaners to maintain them properly and economically.) Build up your business by recommending and selling *the right cleaner for the right surface.*

MAIL TODAY FOR SAMPLES AND PRICES

The Davies-Young Soap Co.
Dayton, Ohio

Please mail samples and prices of your Four Liquid Scrubbing Soaps.

NAME_____

ADDRESS_____

CITY AND STATE_____

THE DAVIES-YOUNG SOAP CO.,
DAYTON, OHIO SOAPS FOR EVERY PURPOSE; FLOOR WAXES, SANITARY SUPPLIES


VICTOR
Chemical
TETRA SODIUM PYROPHOSPHATE
($Na_4P_2O_7$)
● For almost forty years Victor Chemical Works has specialized in the field of phosphates. Victor's unchallenged leadership in this field is clearly the result of being the only chemical manufacturer whose principal business has always been the development and production of the salts of phosphoric acid.
● Of particular interest to soap manufacturers is Victor's contribution to the role of phosphates as soap improvers. Fifteen years ago Victor began making tetra sodium pyrophosphate for certain limited purposes. Later research into pyrophosphate's unique properties definitely pointed to a far more extensive use of the product . . . as a soap improver in particular.
● Convinced that when these unique properties came to the attention of the soap industry a huge demand would be created which no one in the chemical business could supply, Victor spent years developing an improved manufacturing technique adaptable to large scale production.
● By the time the soap makers were ready to use tetra sodium pyrophosphate on a large scale, Victor was ready with a new plant and ample facilities to meet the tremendous demand for a product of uniformly high quality. This plant today is the largest of its kind in existence.
● Through Victor's foresight, soap manufacturers were able to market an improved soap without delay . . . saving many months of valuable time. It is through such foresight . . . and courage to act thereon . . . that Victor has become the world's largest manufacturer of phosphoric acid and its salts.
VICTOR CHEMICAL WORKS
141 W. JACKSON BLVD., CHICAGO, ILL.
Plants: New York, N. Y.; Kansas City, Mo.; St. Louis, Mo.; Greensboro, N. C. Nashville, Tenn.; Mt. Pleasant, Tenn.; Chicago Heights, Ill.
VICTOR CHEMICALS
Phosphoric Acid
Pyrophosphoric Acid
Polyphosphoric Acid
Metaphosphoric Acid
Phosphorus
Phosphoric Anhydride
Phosphorous Acid
Alkylphosphoric Acids
Ammonium Imido Diphosphoric Acid
Ammonium Phosphates
Alkyl Ammonium Phosphates
Fireproofing Compounds
Calcium Phosphates
Magnesium Phosphates
Potassium Phosphates
Sodium Phosphates
Sodium Pyrophosphates
Potassium Pyrophosphate
Sodium Metaphosphate
Alkyl Acid Pyrophosphates
Phosphorated Oils
Formic Acid
Aluminum Formate
Nickel Formate
Sodium Formate
Sodium Boroformate
Oxalic Acid
Calcium Oxalate
Sodium Oxalate
Magnesium Sulphate
Sodium Aluminum Sulphate
Tuff-Lite
Ferrophosphorus
Triple Superphosphate

no need for DATED SOAP

. . . because soap stays fragrant when made with

SCHIMMEL FIXORESIN

The modern perfumer recognizes the effectiveness of resinoids and extrols in fixing and rounding out perfumes. Yet two facts have limited their use: price and color.

Overcoming these obstacles Schimmel & Co. developed its FIXORESINS which not only possess all the virtues of resinoids and extrols but have the added advantage of higher solubility. Inexpensive, they can even be used in the low priced field. Light in color, they do not discolor the lightest soaps. They are equally effective in a variety of cosmetics products and perfumes.

CONSULT US ON YOUR FIXATION PROBLEM.

SCHIMMEL & CO., INC.

601 WEST 26th STREET
NEW YORK CITY

Chicago **Cleveland** **Cincinnati** **New Orleans** **Los Angeles** **Toronto**

How

A MEETING IN 1914 helps you get your money's worth in advertising space TODAY

IF you bought advertising space thirty years ago, you will remember how hard it was . . . how frequently impossible—to get information on circulation needed for effective space buying.

In 1914 a group of clear-headed men, tired of deploring the situation, resolved to do something about it. Their meeting resulted in the formation of one of the most remarkable examples of an industry's self-control—the Audit Bureau of Circulations.

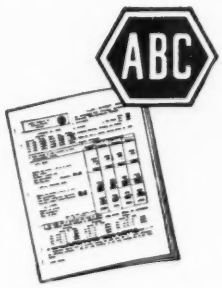
Today, A.B.C. reports reveal and analyze NET PAID CIRCULATION—the true measure of advertising value.

A.B.C. reports answer the three vital circulation questions: how much is there? where is it? how was it secured? A.B.C. reports give verified information on the *quantity,* and an important index of the *quality* of circulation.

Before you buy space in any publication, study the A.B.C. report carefully. Know what you're getting. Then buy—and get what you pay for.

• • •

Ask for a copy of our latest A.B.C. report. It will give you quickly and completely the facts you want to know about the circulation of this paper.



SOAP *and Sanitary Chemicals* **An A. B. C. Publication**

A.B.C. = Audit Bureau of Circulations = FACTS as a yardstick of advertising value

..Can-Making

They're finding NEW ways of PACKAGING merchandise! They're building up greater Sales Power for products . . . new and old! ★ "NATIONAL" ideas of Container design and decoration rate leadership *wherever* PACKAGING goes into competition.

At "NATIONAL" *Men Working...*
to HELP YOU!

NATIONAL CAN CORPORATION

SUBSIDIARY OF MCKEESPORT TIN PLATE CORPORATION

EXECUTIVE OFFICES • 110 EAST 42nd STREET • NEW YORK CITY

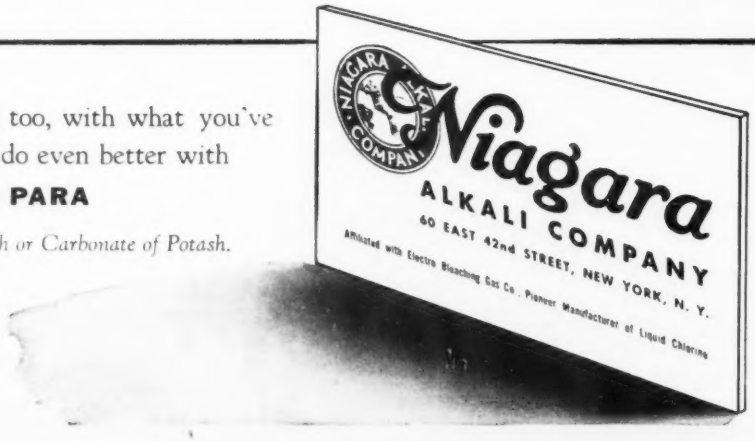
Sales Offices and Plants • NEW YORK CITY • BALTIMORE • MASPETH, N. Y. • CHICAGO • BOSTON • DETROIT • HAMILTON, OHIO

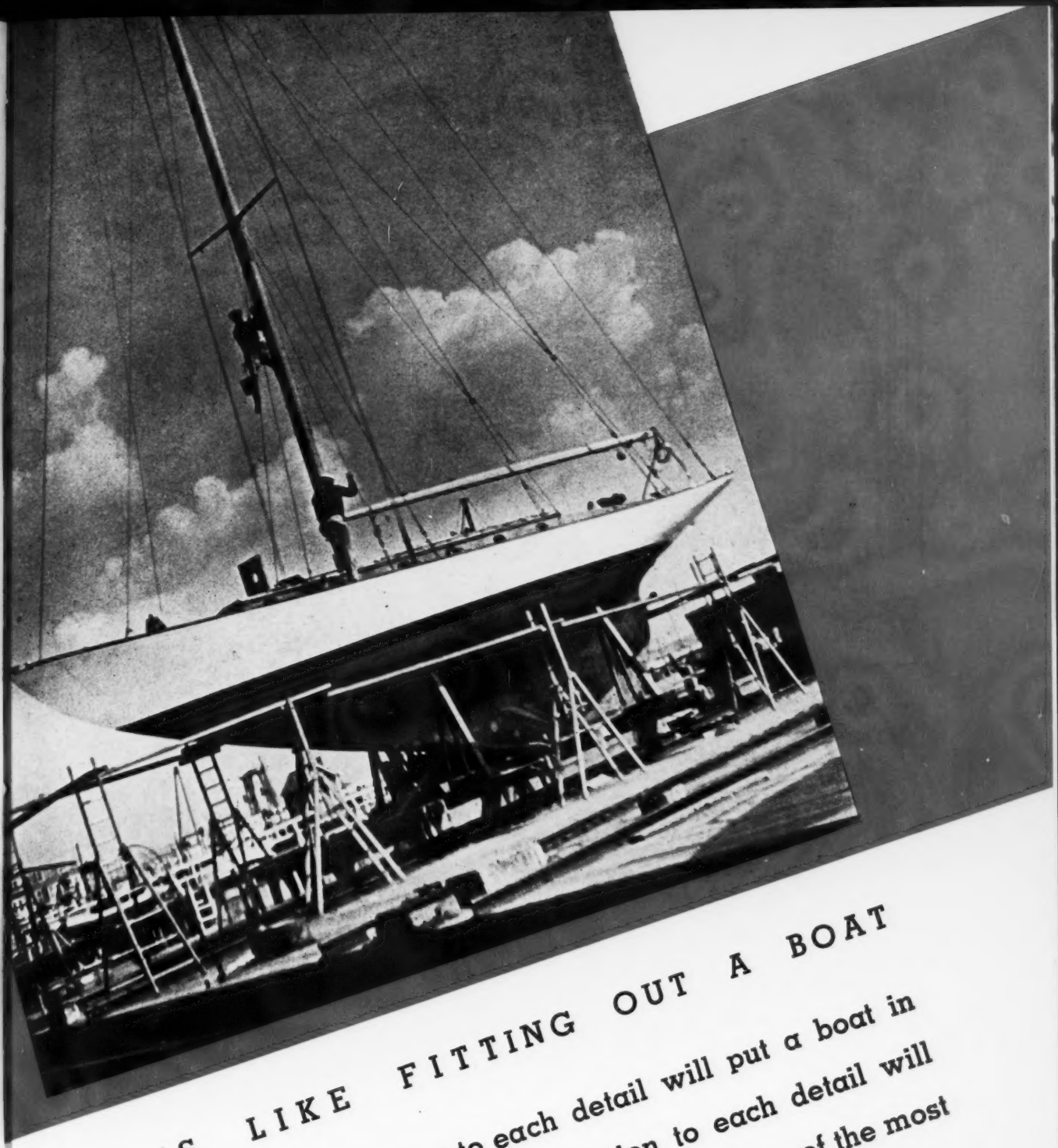
"Yes, mamma, of course, tell him we're doing very well without a Vacuum Cleaner."

You may be doing very well, too, with what you've got, but perhaps you can do even better with

NIAGARA PARA

Or Caustic Soda, Caustic Potash or Carbonate of Potash.

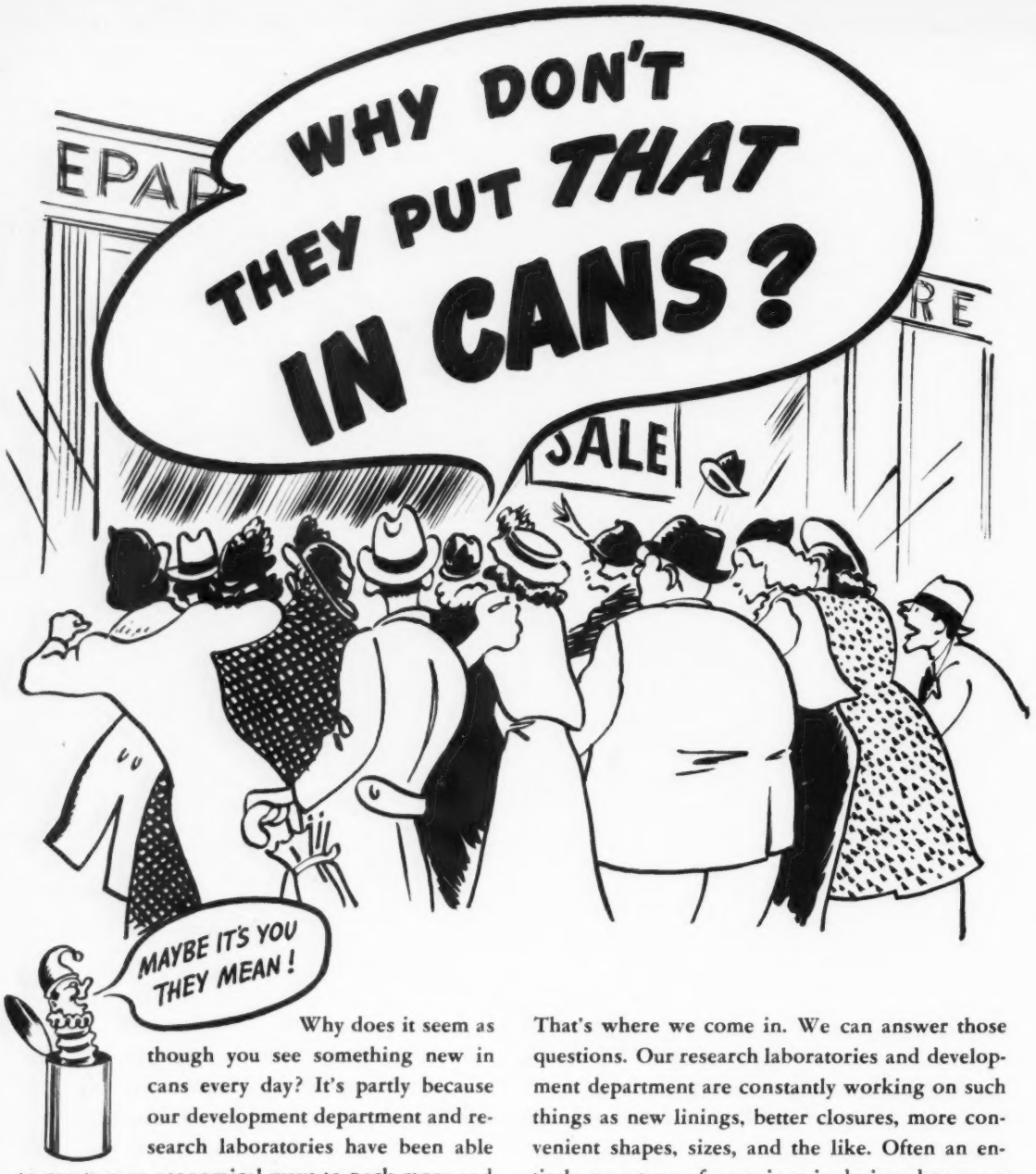




IT'S LIKE FITTING OUT A BOAT

Only exacting attention to each detail will put a boat in racing form. Only exacting attention to each detail will make a soap successful, and perfuming is one of the most important details.

VAN AMERINGEN-HAEBLER, INC.
315 FOURTH AVENUE, NEW YORK CITY



Why does it seem as though you see something new in cans every day? It's partly because our development department and research laboratories have been able to create new economical ways to pack more and more products in tin.

Maybe you've been thinking that a can would be the perfect container for your product. It would cut your shipping costs, cut down your losses on breakage and spoilage. It could be displayed better in the store—BUT—how about the cost—and is the product adaptable to metal packaging?

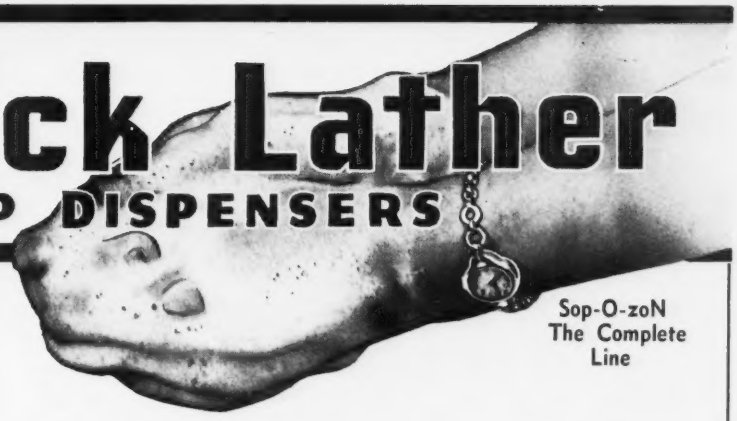
That's where we come in. We can answer those questions. Our research laboratories and development department are constantly working on such things as new linings, better closures, more convenient shapes, sizes, and the like. Often an entirely new type of container is designed to meet some specific need. Then, again, a simple change in an existing container has been responsible for new sales impetus.

Why not get in touch with our nearest office and let us know what you have in mind. Our complete facilities are available to you, without obligation.

CONTINENTAL CAN COMPANY

NEW YORK · CHICAGO · SAN FRANCISCO · MONTREAL · TORONTO · HAVANA

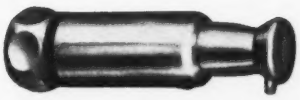
Bobrick Lather
SOAP DISPENSERS



33 Years Experience
Manufacturing Soap
Dispensing Equipment

Sop-O-zoN
The Complete
Line

THESE SEVEN FAMOUS MODELS NOW AVAILABLE IN LATHER



Model No. 861 Wall Type Gravity Valve

Beautiful new streamlined design, solid bronze body. Valve parts all made from stainless steel. Solid bronze piston with stainless steel insert and stainless steel cable which works back and forth through piston at each stroke, thus guaranteeing against clogging, so prevalent in most lather dispensers.

The valve mechanism in all Bobrick Lather Dispensers is identical in construction with the famous C-860 Gravity Valves. Over a half million liquid soap dispensers with this construction have been sold. Many have been in use for 15 years and are still giving good service.

Model No. 868
Pullman Gravity

The ideal valve for basin installations on gravity feed systems.

Solid bronze body and spout with stainless steel inserts and valve parts.

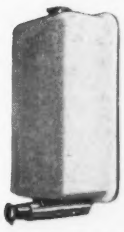
Complete with tailstock and union. Standard model now made to fit basins up to 3½ inches thick.

Model No. 41 Wall Type

The soap being above the valve, Sop-O-zoN dispensers never lose their prime, and washers do not dry out or have to be adjusted. Fully streamlined, bronze body and bracket, chromium plated. Stainless steel valve parts. Wall fastenings concealed. Lock top. One-hand operation delivers soap in the palm of the hand. As the soap feeds from below, soap and water do not splash on the dispenser to make it messy and dirty.

Basin Types
Model No. 899 Straight Globe
Model No. 894 Pear Shaped

Fills from the top without removing glass jar. Straight jar is standard model. Pear-shaped jars can be furnished for small or special basins. Both models now furnished with shanks to fit basins up to 3½ inches thick. Bronze body, stainless steel valve parts and inserts.



Model No. 45—Pint Capacity
Model No. 47—2½ Pints

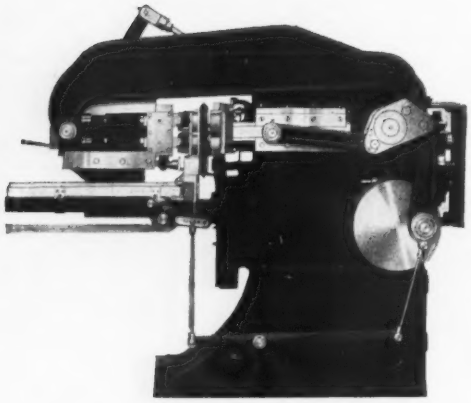
Heavy pressed-steel body, white porcelain enamel finish. Bronze valve body. Pressure of operation directly against the wall, not against body of the dispenser. Stainless steel valve parts, lock top. Concealed fastenings. Cannot be stolen. Ideal for schools, service stations and other places where dispensers receive extraordinarily hard use.

BOBRICK
MANUFACTURING CORPORATION

15 EAST 26th STREET
NEW YORK CITY

111-117 SO. GAREY STREET
LOS ANGELES, CALIF.

SOAP PRESSES *Without toggle motion are obsolescent*



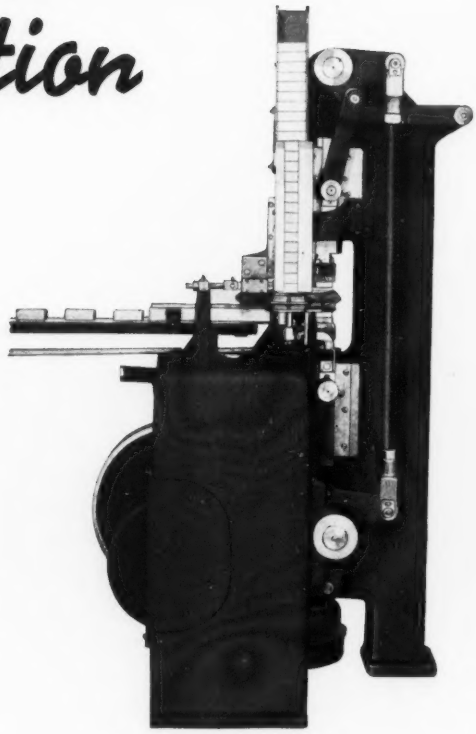
Type K Laundry Soap Press

JONES *toggle motion* PRESSES

produce a more gradual pressure than any other means and prevent the cracks so frequently found in cakes stamped by a sudden blow.

Gradual Toggle Motion pressure gives soap time to adapt itself to engraving and other die recesses and brings out clear, sharp letters and designs.

Toggle Motion holds cakes under pressure longer and produces a smooth, polished finish unattainable without it.



Type ET Toilet Soap Press

R. A. JONES & COMPANY, Inc.

P. O. BOX 485 CINCINNATI, OHIO

The Standardized *Constant Motion Cartoner* packages, bottles, jars, tins, collapsible tubes and many other articles. It feeds, folds, and inserts direction sheets and corrugated board liners with the loads.

As the Editor sees it..

WITH the President, the Secretary of State, and the Secretary of Agriculture coming out flatly against any increase in the three-cent excise tax rate on coconut oil and other imported oils, fats and fatty acids, and backing their stands by sound reasons why the rate should not be increased to five cents per pound at this time, we wonder if the dairy, cotton oil, and other proponents of the increase will continue to push their case. That such an increase will seriously embarrass the Administration in its trade treaty relations is only one of the reasons against the increased processing tax. Domestic oil and fat producers already have a protective tax approximating one hundred per cent against the competition of foreign oils. We certainly have no desire to see domestic oil and fat markets beaten down as they were back a few years ago, but we most certainly feel that the present protection is more than ample. Aside from the complications which such an increased tax would bring up in legislative Washington, a five-cent excise tax is excessive now or any other time.

OVER the grapevine, comes the word that as much as **eighteen million dollars** may be involved eventually as a result of the latest series of patent suits in the middle-west involving the manufacture of soap products by spray processes. This, it is stated, is the damage value placed today on one of the earliest spray soap patents. And, it is reported further, the same patent was kicked around quite a bit when it was first issued, and could then have been picked up for a thousand dollars. Of course, this is the rumor. You can take it or leave it, as you see fit!

REBELLION is smouldering all over the country. The prospective rebels are the thousands of retail grocers, druggists, hardware dealers, et al. And, if what we hear from them in scattered localities is true, they are just about to break loose against the multiplicity of deals, combinations, premiums, coupons, displays, and what not which they maintain manufacturers have been jamming down their throats. In order to avoid being completely overwhelmed by all these special deals which have come down upon them like an avalanche during the past few years, and to reserve room in their stores for at least a small stock of regular merchandise, the dealer is just about to kick over the traces and demand a moratorium against deals.

The mention of deals, coupons, and the like to the average retailer today brings a gleam of rage into his eyes. He gets that look which a woman takes on just before she screams. After he has quieted down sufficiently to talk, he will tell you that he has been driven almost nuts by a steady stream of special combinations, coupons, and the like. He wants to go back to his old way of doing things and have time to catch his breath. He is tired of his store looking like a cross between a Christmas tree and a Syrian bazaar. He is mad and

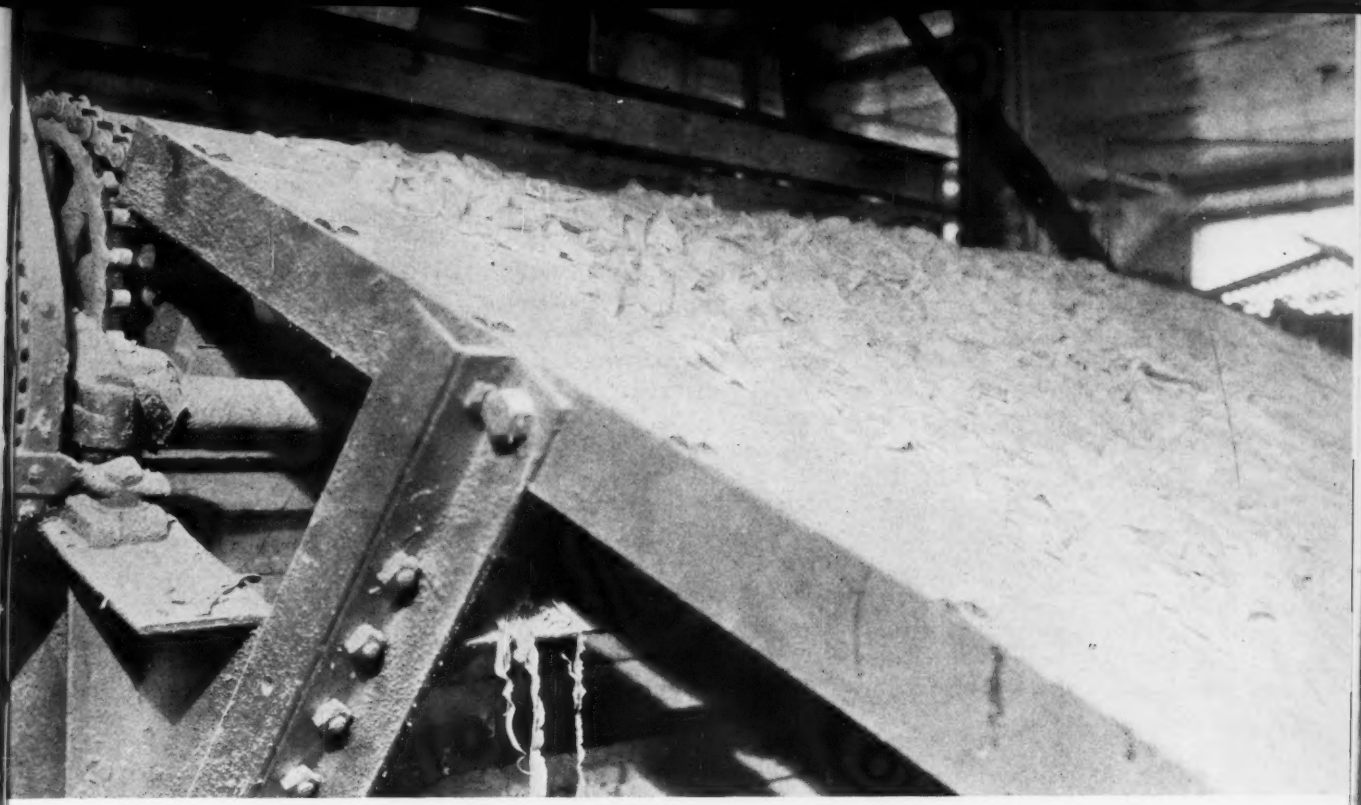
all fed up. And he is taking it out on the poor innocent salesmen who have to walk right in and bear the brunt of his wrath. So if in the near future we hear of a salesman having his head caved in from being hit with the latest very extra special thing in combination deals, we will know that open rebellion has actually broken out.

THE wholesale slaughter of proposed legislation by various state legislatures during the past few weeks may indicate a changed direction in the swing of the legislative pendulum. Although, it seems, every legislator has some pet project which he would like to put on the law books of his state, there has come a wave of revulsion against the growing tide of new laws. Secretary of Agriculture Wallace sounded the keynote of this feeling when he stated bluntly in a recent address that we have altogether too many laws in this country. We hope that consciousness of this situation permeates numerous other state legislatures before they add further to the growing pyramid of new, —and far too often, unnecessary legislation.

IF THERE is one thing which the average small manufacturer does with less care than another, it is the hiring of salesmen. The number of reported cases where salesmen victimize their employers is, in our opinion, positively amazing. A check-up reveals that in most instances references were not investigated or were not required. If the prospective salesman announces that he has had a successful record with a **competitive** firm, it seems to be quite the common procedure to hire him without further ado, advance him expense funds, drawing account, and turn him loose on the trade. Why consult a competitor and let him know our business? How can our new "find" go out and swipe the business of his old accounts (if he had any) away from his former employer if the old employer is tipped off that he is now working for us? No, sir, we'll keep quiet and take a chance that the new salesman is honest.

But this very policy continues to cost innumerable small firms, particularly in the soap and sanitary products fields, many thousands of dollars. No large firm would take chances of this kind, and it is hard to explain why smaller organizations who frequently can ill-afford it, will gamble with men of unknown background. But they do, —and they pay dearly for it. Any employer who hires a salesman,—or anybody else for that matter,—on the mere say-so of the prospective employe is purely and simply a sucker.

FROM a jobber who sends a very fair tonnage of soaps and cleansers into consuming channels, particularly in the industrial and institutional field, we have a complaint against manufacturers who sell to the jobbing trade and at the same time, sell the jobber's customers direct. This particular jobber states that for a long time he has searched for a manufacturer who confines his efforts to the jobbing trade alone, and has as yet been unable to find one. Off hand, we feel that he has not looked far enough and that there are a number of manufacturers who do not sell direct to consumers. At the same time, this subject, which is both a delicate and a complicated one, has been brought to our attention by irate jobbers on numerous occasions in the past. What can be done about it? Frankly, we do not know. Study of the matter in a manufacturer-jobber conference might be helpful.



SOAP TEXTURE

. . . which raw materials and processes give what physical characteristics to soap?

By Harold Silman
London, England

TEXTURE, so far as the term may be applied to soaps, is difficult to define. In this article, however, it is being used in the sense of the consistency, appearance and general physical properties as determined by the raw materials and processes used. These properties, will in turn, have their effect on the various stages of manufacture and will affect the quality of the finished soap.

The term "iodine number" as applied to fats is well known, and is a figure indicative of the degree of unsaturation of a given fatty acid. It is a general rule, which is fairly well adhered to by the majority of fatty acids, that fats of high iodine value give soft soaps and vice versa. Unfortunately, when mixtures of fatty acids are employed (as is generally the case in practical soap-making) the iodine number becomes a very unreliable guide, on account of the differing natures of the unsaturated fatty acids present in the stock.

In order to obtain a more complete picture of how a fatty acid mixture will behave on saponification, its saponification value must be determined. This figure is directly related to the fatty acids actually present in the mixture, irrespective of their degree of saturation. The saponification number of a fatty acid mixture, will therefore indicate whether the fatty acids present are of high or low molecular weight. It is seen that both the iodine number and the saponification number of a fatty acid are of great value together, although taken singly they are of limited application.

The I.N.S. Factor may be de-

Above—The composition of the soap ribbons as they enter the dryer, and their consistency as they emerge have an important bearing on the texture of the finished cake of soap.

fined as the saponification number minus the iodine number. This factor is an empirical one and has in recent years been found very useful in the soap industry, despite its limitations. It is found that, as would be expected, oils which are liquid at ordinary temperatures, possess low I.N.S. factors on account of the fact that as a rule, the greater the percentage of unsaturated acids present in an oil, the lower is its melting point.

The practical application of the I.N.S. factor, is determined by the following characteristics of the fats and oils commonly used in soap-making.

1. Soaps made from fats of high I.N.S. Factor are harder than those from fats of a lower factor.

2. The melting point of the oils and fats rises with the increase in the I.N.S. Factor.

The I.N.S. Factor of fats and oils vary considerably. The table below shows the factors of a number of oils and fats.

	I.N.S. Factor
Linseed oil	15
Rosin	40-50
Cotton seed oil	85
Olive oil	108
Lard	136
Tallow	150-170
Palm oil	144
Palm kernel oil	235
Coconut oil	250

The figures given for tallow and rosin must not be taken as accurate, since the I.N.S. factors of these materials vary considerably, and should in fact be determined independently for each sample if an accurate value is required. In practice however, it is found that the titres of these substances are roughly proportional to their I.N.S. factors, and on this basis it is possible to obtain quite quickly a reasonably accurate value for the I.N.S.

Taking the I.N.S. values of the various fats which are to be incorporated in the stock to be used for producing a soap, it is possible to calculate the exact proportion of each fat which needs to be present to give a soap of a required hardness. Soaps of equal I.N.S. Factors possess equal degrees of hardness. For example: suppose it is desired to produce a household soap of equal hardness to that of a straight lard soap of I.N.S. factor 139·3. This could be done by compounding varying percentages of different fats, provided that the I.N.S. factors of these (expresed in relation to the precentages of each present) when added together came to 139·3. Such a value would, for example, be given by the following mixture.

30% Palm oil (I.N.S. 141)	42·30
25% Palm kernel oil (I.N.S. 235)	58·75
45% Cottonseed oil (I.N.S. 85)	38·25
	139·30

Similarly, total fat mixtures of any required I.N.S. factor and consequently any degree of soap hardness can be compounded by calculation on this basis. In this way, the manufacturer is able to base the stock he uses on the types of oils most readily available, or most favorable to him economically, so far as market prices prevailing at the time are concerned.

The texture of the soap which will be produced from a mixture of fats may be determined by calculation from the I.N.S. factors of the component fats, as has already been stated. Nevertheless, the hardness of the soap is not sufficient to specify its lathering properties, which are dependent on the solubility ratio. Solubility ratio is again an empirical factor which is calculated by dividing the I.N.S. factor of the oil mixture by the total of the I.N.S. factors for all those oils present having an I.N.S. factor exceeding 130 (excluding palm kernel and coconut oils, which have exceptionally high factors, for reasons which will be examined later). Thus, in the example just quoted, the solubility ratio will be 139·3 divided by 42·3, viz. 3·0. This figure represents a comparatively high solubility ratio, and such a soap will therefore possess good lathering powers.

The outcome of this is that it is possible for the manufacturer, by the use of the I.N.S. factor and "solubility ratio" to maintain any desired standard of hardness and lathering power in his soap, and yet be able to vary the types of oils and fats which are to be used in his stock. The advantages of being able to select from a wide range of raw materials and yet maintain a standardized product are so great, that they require no emphasis.

Lathering Powers

THERE is always a certain amount of difficulty in correlating lathering power and solubility, since lathering power is not a scientifically determinable quantity, and is moreover affected by water conditions, temperature and other external considerations.

The lathering powers of a soap depend on the following main conditions:

1. The solubility of the soap.
2. The nature of the fatty acids present in the soap.
3. The nature of the alkali used in saponification.
4. The temperature of the water.
5. The hardness of the water.

Items (1) and (2) are closely bound up with one another, since there are certain fatty acids which produce highly soluble soaps, but which nevertheless, lather poorly. Prominent amongst these are palm kernel oil and coconut oil, the lather from which is excessively foamy. Apart from these, however, high solubility in a soap, particularly when associated with increased molecular weight of its saturated fatty acid constituents, indicates good lathering properties.

Nature of the Alkali

THE alkali used for saponification plays a part in the determination of the lathering power of a soap. Caustic potash produces a softer and more soluble soap, as is generally known, than does caustic soda. This fact is made use of especially in shaving soaps where quick-lathering properties are desired. In the manufacture of such soaps, saponification is therefore carried out with a mixed alkali the proportion of potash incorporated being just sufficient to import good lathering powers without making the soap too soft.

In the case of shaving creams, as much as 90 per cent of caustic potash may be used in the alkali to produce a satisfactory cream. Generally, a proportion of glycerine or other emollient is introduced into shaving creams as well. In the case of white shaving soaps, from 60 to 70 parts of stearine together with 30 to 40 parts of coconut oil provide a suitable base when saponified with a lye consisting mainly of potash. Colored soaps utilize bleached palm oil or palm stearine. In this case the percentage of coconut oil is reduced while the alkali should contain at least 20 per cent of caustic soda, in order that the soap may be sufficiently hard.

Temperature of Water

MOST soaps produce better lathers in hot than cold water, chiefly on account of the fact that their solubility in hot water is greater than in cold. This, however, is not universally true. Thus, coconut oil soaps have practically the same lathering properties in cold as in hot water. This property is, to a certain extent, characteristic of the nut oils and those fats and oils consisting largely of unsaturated fatty acids. In the case of the harder soaps produced from more or less highly saturated fats, there is a steep increase in lathering powers with increase in the temperature of the water used.

Hardness of Water

WATER hardness is always an uncertain factor in determining the type of soap which a manufacturer should produce, and this problem is brought home particularly when a nation-wide sale is anticipated for a particular brand. Unless it is possible to produce different grades of the product allowing for variations in the local hardness of the water which the soap will meet, difficulties must, of necessity, arise. Generally speaking, local variations in water hardness are considerable and it is no easy matter to produce a soap which will be satisfactory under all conditions. A good soap should lather satisfactorily in cold as well as in hot water.

To increase its cold water lathering properties, a percentage of the more soluble nut-oil soaps of low molecular weight e. g. coconut oil, is desirable. These soaps, although producing foamy, unstable lathers, increase the solubility of the soap as a whole and thereby tend to bring the harder soaps present into more rapid solution. Moreover, in hard water the alkali so liberated, will precipitate the lime and magnesium soaps more quickly and so promote lathering sooner than would otherwise be the case.

It must, of course, be borne in mind, that a soap designed to lather quickly in hard water has the disadvantage of dissolving too rapidly when used in an area where the water is softer. These points must naturally be taken fully into account where a soap is to have a widespread sale.

Unsaturated Oils

THE lathering powers of the soaps of fats such as tallow, palm oil, lard, etc. of I.N.S. factors lying between about 130 and 160 are, as has been indicated, relatively poor. They are also expensive and it is therefore usual to incorporate oils of lower I.N.S. factors in the stock, especially for the manufacture of household laundry soaps.

The effect of these oils is to increase the solubility and hence improve the lathering powers. Unfortunately, however, it is found that the addition of such oils results in a greater increase in the softness of the soap than in solubility. In fact, were an attempt made to increase the solubility of a hard soap by the addition of stocks of low I.N.S. factors alone, such as cottonseed oil, the soap would become too soft for practical purposes well before a satisfactory degree of solubility had been attained.

It is here that coconut and palm kernel oils find an unequalled use in soap stocks, since they enable the soap to be increased in solubility without softening them to an undesirable degree. Only a comparatively small amount of these oils is necessary to achieve this effect and their presence in present-day stocks may be said to be practically essential for this reason.

Properties of Fats

EACH of the fats used in the manufacture of soaps imparts its own particular properties to the finished product and this must be taken into account in compounding a soap stock. For example: palm oil and olive oil soaps produce a lather which is very close, long lasting and does not dry on the skin too quickly. These oils therefore find application especially in shaving soaps and creams. Stearine soaps are also used in these products on account of their white color and the close lather such soaps produce in hot water. Stearine is, however, generally mixed with a proportion of coconut or other nut oil to increase its lathering powers, which otherwise are rather poor. As coconut oils produce soaps which lather freely and form a foamy rather than a close lather, the proportion present in a shaving soap stock should be kept small. On the other hand, the potash-soda ratio must not be allowed to become high or the solubility will again be impaired. It is desirable to keep this ratio at about 75 — 25.

General purpose soaps have an I.N.S. factor of between 130 and 160 with a solubility ratio of 1·5 or higher. Although soaps for special purposes are made with different characteristics, household soaps should contain a considerable proportion of fats of medium I.N.S. factors.

Soap Fillers

SOAPS may be "filled" or "built" either for the purpose of cheapening them or to alter their texture. In the case of settled soaps and household soaps, the fillers or builders chiefly used are the sodium silicates, soda ash, and certain phosphates. Soap filling must be carefully carried out, or the texture of the soap will be spoiled. The use of neutral sodium silicate is lim-

(*Turn to Page* 72)

TOILET SOAPS-

By Martin Ullman

THE purpose of this writing is threefold: (1) To measure the relative selling effectiveness of packaging ideas. (2) To determine rules, principles and formation of design technique which make faster sales. (3) To demonstrate methods for expediting the process of translating packaging ideas into more profitable sales.

Package design can serve one or two purposes. It can picture things as one commonly sees them. Or package design can become the finest kind of showmanship. It can let the eye see the articles in a dramatic setting, a setting which is dramatic because it has an intentional and not merely an accidental emphasis. It can let the eye see articles in a style which presents the merchandise with greatest intrigue and force in which every element is favorably adjusted to quick comprehension.

You may say that your package gets attention regardless and that your package does not need dramatic attention-getting emphasis which a new idea can give it. You may say, let well enough alone,—competition has not changed, why should you? To which I say, find out now if there are any negative selling factors in your package. Don't wait for a drooping sales chart to panic you into hurried package change.

Selling the same product in the same package for 21 years in the same syndicate chain, an important manufacturer became concerned over diminishing sales volume. As long as there was little competition to fear, he let well enough alone and carried on with the old package. As competition became continually more keen, he recognized that his package was practically the only means of conveying a message to the mass of buyers who crowd into these stores.

The product was of good value, of good quality, sold at the right price and otherwise in keeping with competition, but the package had no individuality, no sales value. Realizing fully what package appearance means particularly in open displays as in chain stores, the manufacturer decided upon package redesign. After spending five months unsuccessfully seeking an idea among his associates, among package suppliers and even among the trade, the manufacturer put his problem in the hands of a package designer. One idea was submitted and was shown

. . . pennywise and package foolish?

in rough dummy form to the buyer for the chain. He approved. The store managers were delighted when the new package was introduced. The public reaction was splendid. In a period of unusual market conditions the new package gained not only greater acceptance from consumers but won the cooperation of the store managers who gave more counter space to it. Additional outlets were opened. Sales, if it interests you, went up 357 per cent in the first year, another 41 per cent above that the next year. The increase was traced directly to the new package since there had been no change made in the product. Only the negative selling factors of the package had been eliminated.

You may think your package is good. But is it as good as you believe? It may have been the outstanding package when you started using it but the general run of packaging today is better, more skilfully designed than was the packaging of only a few years ago. Now more than ever, provocative packaging ideas are necessary because most small-package retail buying is superficial, not analytical. People form snap judgments from first impressions. This isn't the way it should be, but that's the way it is, and such a situation calls for questioning rather than smugness.

Package design has come emphatically to the fore due to (1) the growth of public appreciation of the physical appearance of things, (2) the introduction of cellophane which made the public package conscious and (3) the improvement of store in-

Packaging Analysis

FIVE preliminary mental steps are standard practice with Martin Ullman in designing or redesigning a package. They are taken by him before getting down to sketches, color scheme, rough models and drawings. If these five mental steps are taken into account when considering a proposed package and applied with a sense of proportion, he states that the results are bound to broaden the market for products which hitherto seemed to be packaged well enough.

1—**Study of the product . . .**

(a) What is the nature of the product to be packaged—new product, new service, or old product, old service?
(b) How many uses has it?
(c) What impresses me most about it?
(d) What sales angles are there on the product?
(e) What is the best appeal?
(f) How much consideration does the consumer give to price when choosing this particular product?
(g) Does the sale of the product depend upon display efficiency?
(h) Is the product simply superior to similar products?

2—**Legwork . . .**

(a) How is this product packaged at the plant?
(b) What competitive packages already occupy the field?
(c) How are competitive products packaged?
(d) What is their strength?
(e) What are the habits, likes and prejudices of the prospects in relation to our product?
(f) What are shelf conditions, —advantages and disadvantages?
(g) Which does the retail trade prefer to display—the "lie-down" or "stand-up" type of package?
(h) Where will the package be seen—from a distance or at close range, above or below the eye level?
(i) In what way does the size and type of package affect storeroom procedure?
(j) What consideration should be given to the construction of the package to withstand damage in handling, in piling or stacking?

3—**Pick and Choose . . .**

(a) Which idea used can gain greater effectiveness on the package?
(b) What objectives should be sought in making package changes?
(c) Which type of package is the most efficient and economical?
(d) What defective or objectionable features in similar packaged products in their size, storing, in the display, put-up, etc. should be eliminated?
(e) Should the package change be made gradually or rapidly?
(f) Will a different shaped package ship better?
(g) Stack to more advantage on the retailer's shelf?
(h) In what way can redesign make savings possible?
(i) Will the package be subject to casual observation, continued observation, close study?

4—**Stew over an angle . . .**

(a) What feature is there about this product or service that will interest buyers?
(b) To what kind of appeal will they respond?
(c) Is it a "lot for the money"?

5—**Measure your length, width and strength . . .**

(a) Can the package visualize the product to tell the buyer what he or she wants to know?
(b) Can the package be so designed that the consumer has no difficulty in getting at the contents?
(c) To what extent can the package make the consumer part of the purchase?
(d) How can the package promote profitable sales?
(e) How much money can be spent on packaging?
(f) How may sales be increased through improved package design?

teriors where goods are so displayed that they are not only in sight but readily accessible so that customers may pick them up for further examination. Because so many women shop without knowing exactly what they want, mind-changing goes on a million times a day. People are prone to measure the value of an article and judge its quality, before use, by its packaging. The impression is general that a well-packaged article is a good article.

Package changes, redesigns, new conceptions in put-up for toilet soap products should not be considered alone for their possible sales increase value, but also from the standpoint of protecting markets and making it harder for competitors to take business away from you. The soap company which fails to redesign its package as often as necessary to include fresh demonstrable distinction, dramatically designed, cannot expect to hold its position on retail shelves.

The difference between a good package and a better package is often a matter of profitable sales. Package better and your product looks better. Does it cost more? The truth is that improving the package rarely raises package costs. Such changes as may be suggested by careful analysis rarely cost more than skill and thought. The cost of good designing is little more than the cost of bad designing; and to print eye-arresting packages costs no more than to print the other kind. In other words, it is not what you pay but what you get for what you pay that really matters.

Several years ago the Regal Paper Company of Pulaski, New York in the person of President Earle H. Benson came to my office. His expensive machinery had come to a halt, his warehouses and stockrooms were overstocked with products. "How can we move our napkins into the hands of consumers and off the Woolworth counters? We could do it by spending a lot of money on advertising or we could cut the price indirectly by increasing the number in each package, but either move would be disastrous because our margin of profit is so close. Can we do anything through packaging? Have you any ideas which would work and yet cost as little as our present packages?"

Chief snag in Regal's package turned out to be that it got poor display in crowded Woolworth stores. No one had considered point-of-sale problems when the package was designed. That probably explained why their package was breaking no sales records. It was just about the standard of most other competitive packages, meaningless, without distinction or sales value. The product was banded in a dingy paper wrapper, open to dirt and prying fingers, just like its competitors.

By folding a strip of cardboard four times laterally, crossed sideways with a cellophane sleeve, a dispenser box was formed which kept the contents free from soil and yet let them well on view. By laying the first three napkins over the flap, the purchaser was able to feel the texture without disturbing the rest of the contents. Cost? No more than before.

Now comes the particular merchandising angle of the story, an angle which would never have appeared without the movement of a new package. The Woolworth buyer was so pleased with the new package idea that he insisted that it be confined to Woolworth's alone. Now Woolworth's have a very rigid policy that no supplier may circularize or contact the individual store manager. And the store manager is an important man. It is in his hands whether a line is repurchased or not, and he decides on the amount of display and counter space his store can afford to give it. So you can see that he is a man well worth getting to, and, at the same time, he is almost impossible to get to. In return for the exclusive rights to the new package, Woolworth agreed to allow Regal to send an illustrated folder to each store manager through each of Woolworth's 15 district managers who wrote a personal letter to each of his group of store managers recommending that they feature the new package.

A new package idea opened to Regal a wider distribution than they had ever had or hoped for. In other words, a manufacturer got the complete distribution of his brand, which he had not had before and got it purely on a package design idea. But note that the design was no mere surface treatment. It went a whole lot deeper, into construction and utility. It took into account the merchandising background of the product, the habits of prospective purchasers.

Many business men gauge their package by its surface appearance. If the printing is exquisite, if the brand name is legible, if the color scheme is beautiful and the package as a whole looks better than that appearing over the signature of competitors, then these men are satisfied. As a matter of fact, competitive packaging is a mighty *unsafe* standard of measurement.

Many packages of toilet soap rely solely on an imprint of the brand name to continue the selling job on the counter of the retailer and afterwards, and in the home of the consumer. Such treatment of package surface, seems to me, like a serious loss of a splendid opportunity to accent values of the product, its benefits, principal advantages and results. We might claim: "Well Palmolive has spent millions to make its name synonymous with soap and doesn't need to say any more." I question the smartness of denuding the package of everything except the trade name,—even in the case of Palmolive. In such instance, the name serves only as a reminder of sales arguments expounded through other media. In addition to the reminder value of the brand, why not pound home the same selling points at the time of sale and the time of consumption? The best advertising copy can be ruined by unsympathetic package design.

Investigation shows me that at least 96 per cent of toilet soap packages used just the name of the brand as the design theme for the package. It was almost as if this formula had been standardized, as if by common agreement, although I feel it is largely a trade habit. To break away from convention in this regard would mean inevitably to secure increased visual attention because it would be doing something different if nothing else.

Look through the files of any of the women's magazines and note the frequency with which such selling thoughts crop up: *Pleasure and relaxation in a bath* (Ivory), *freedom from offending* (Lifebuoy), *a beautiful skin* (Palmolive), *a facial cocktail* (Woodbury). So why not use the package to further along these sales appeals? There are six sides to use as we choose. Yes, every package,—even a cylindrical one, can be divided into six surfaces,—six excellent opportunities to aid and advance a selling theme. Some manufacturer, with an eye to the importance of keeping a brand name alive day in and day out will admit the importance and aggregate power

of package space and use all of it for strategic purposes, for selling arguments, when the memory of radio, newspaper and magazine advertising might be growing shadowy.

This country is a union of States, but not of tastes. That package which is so successful along the Atlantic coast may fail to appeal in the Middle West. In the East women have their ideas of what they like. In the West it is not the same. In the South, it is another choice. Generally the same package appeal blankets all points of the compass. Why? Wouldn't your package, if it is nationally distributed, be still more effective if you should make your appeal more definite? I mean by that, appealing now to one class of women and then to another. Certain women respond to the exclusive idea; other women are devotees of style. Still other women like the appeal of luxuriousness, quality, beauty, fastidiousness of taste. You could play on certain well known feminine weaknesses through a series of ideas visualized through package design and in that way be sure of getting all classes of women, North, South, East and West. *Turn back to the Regal story and its moral.*

There is an important question regarding the best position for the brand name. I do not believe that this is at the top of the package. I have found that to get best attention the main legend should appear close to, yet slightly above, the center of the package. An increase of 25 to 30 per cent in attention value follows when this is done.

Brand names must have plenty of air space. The letters must be spaced out and have space around them. They will never get attention if the letters are all jammed on top of one another. Crushing letters together is like the old fashioned window display—a jumble of everything and nothing standing out. A jeweler named Tiffany puts one piece of jewelry in a window, surrounded by black velvet. He had studied Japanese art. He realized that "breathing space" was the art of holding attention.

Package designs adapted from magazine advertisements usually retain far too much of a character which, while proper to the original medium, is unsuitable for package design. Curiously enough some toilet soap packages which have been doing duty for years come from firms who, in the magazine advertising of the same product, realize the necessity for a frequent change in layout and text. It is easy to understanding reluctance to scrap a design which has been in use for years. An old package receives little more attention than the pattern of a rug which has been used for years.

It would be a good thing if a means could be devised to ascertain the profitable life of a package design. I suspect such a test would result in some well known packages, which have done excellent service, being pensioned off. The greatest possible measure of success in packaging can be obtained, I believe, only by a periodic alteration in design. I have greatly admired the courage with which some advertisers have ruthlessly superseded one brilliant advertisement after another in their resolve to give the public something new as soon as, if not before, it has tired of the old.

It is a fact that advertisers seem less timid about magazine advertisements than package designs. After all, it is the newness and the originality of a design that first attracts the eye among a crowd of "usuals."

There are no formulae, the accurate use of which will inevitably result in a package which will make the sales curve bend suddenly upwards like a temperature chart at midday. But I think there are a few simple rules, the observance of which is essential if a package is to be effective.

Foremost, I would say, digging deep into the roots of marketing problems is essential. Let us suppose that I have been asked to advise a soap manufacturer on the packaging of his product and to undertake the designing. First I would take "5 *Mental Steps*." These steps are standards practice with me, and gives clues to deciding packaging policy. They are taken *before* getting down to sketches, color schemes, rough models and drawings. The "5 *Mental Steps*" are detailed elsewhere.

I believe that there should be more experimenting in the novelty use of package surface. There should be more variety. The only reason I can assign for the scarcity of good package designing is lack of mature consideration for its importance on the part of toilet soap manufacturers. With the present frame of mind of management, the word "package" causes them to shift that particular job to the purchasing agent. Of the many purchasing agents whom I know personally, few of them indeed pose as sales promotion men,—they are dealing with materials and materials only, and naturally are attempting to secure these materials at the lowest fair price. If they are minus the "performance duty" that the package is to do, then they buy the units required and the size required from the requisition received.

While the soap industry has been far from inactive as far as introduction of modern equipment is concerned, face-lifting of the package itself has been backward. Mechanical improvements have not been matched by a new conception of package design. In fact the soap package is still treated as a stepchild,—the sales-manager's headache rather than management's responsibility.

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Brushless Shave Cream

Brushless nonfoaming shaving cream contains ingredients which have wetting power and may be made as follows: Melt 16 parts of white amorphous stearin having a titer of 53-54° C. with 4 parts of vaseline oil and 1 part of cetyl alcohol. Saponify at 80-90° C. with 5 parts of 20 per cent caustic potash solution heated to the same temperature. Add 5 parts of pure white glycerine and 69 parts of water. Stir, and add perfume when cooled down to 40° C. *Seifensieder-Ztg.* **66,** 58 (1939).

Wash Test Methods

Arguments for the evaluation of detergents by application of the photo-electric reflectometer

By Dr. E. Loewenstein
Pfaltz & Bauer, Inc.

IN checking the efficiency of detergent materials or washing methods much depends upon the uniformity of the soil on the goods being washed. In the interests of accuracy, it is essential that such goods be artificially soiled. In a recent issue of SOAP, W. W. Cobbs* mentions the application of the photo-electric reflectometer in demonstrating the detergent effectiveness of tetrasodium pyrophosphate, and accurately gauging the soil removed from swatches during the washing operation. The method used by Cobbs is suitable as a standardization for wash tests.

Pieces of test cloth are first dirtied in a soiling box containing a standard soil solution. The soiled cloth is dried mechanically and cut into swatches (4" x 4") and placed in jars. These jars are then sealed and placed in a shaking device called the launderometer, for accurately checked washing periods. When the washing is completed the swatches are removed from the jars cut into narrow strips (4" x 1"), are dried and cataloged as to group and then tested with the photo-electric reflectometer, which gauges the exact amount of soil removed from the cloth during the washing period. As an example in these tests, 4" x 4" of standard soiled cloth are placed in a fresh detergent solution and washed at 140° for ten minutes. The square is removed from the jar and rinsed in hot water and a fourth of the cloth (1" x 4") is cut off. The remainder is then placed in a fresh detergent solution and the machine is run 10 minutes longer.

It is then extracted, rinsed and another inch strip cut off. The process is repeated until at the end there remains an inch wide strip which has received four ten-minute washings. The results obtainable when each strip is checked with the photo-electric reflectometer shows the percentage of soil removed in the four washes. For instance, if the first 10 minute wash gives 25 per cent soil removal, the cumulative effect after the second 35 per cent, the third 45 per cent and the fourth 55 per cent, the efficiency of the cleansing material or method is arrived at by taking the average of 25, 35, 45, 55, which is 40 per cent average soil removal. It has been proven that the degree of whiteness in uniform washing stages, increases, following a logarithmic law. If results are plotted on logarithmic paper using the abscissa for the time element and the ordinate for the degree of whiteness (pointer deflections of galvanometer), the result will be a straight line.

The photo-electric reflectometer used by Cobbs was an older model upon which certain improvements have been made. Of primary importance is that the newer instruments have a compensating circuit which increases the sensitivity 5 to 10 times. The instrument is adjustable to give a full measuring range covering the complete scale of the micro-ammeter.

The reflectometer is primarily a novel photocell which transforms light directly into electric energy, indicated by a micro-ammeter, which serves as the measuring instrument. The photocell is enclosed in a nickel plated metal housing with terminals for the micro-ammeter, and a cable for the built-in low voltage bulb, which is situated behind the photocell. The radiation passes through the central aperture of the cell and is reflected from the test surface. The intensity of the reflected radiation and thus of the photocell corresponds to the degree of surface finish.

IN laundry operation a means of determining "how white is white" can be of definite importance, whiteness being the ability to reflect incident light. The whiter the surface the more light is reflected. This is particularly important if any form of standardization or control is to be employed. The "how white is white" theme readily resolves itself to "how clean is clean." Thus, the higher the reflectability, the cleaner the laundry. It can be generally assumed that new sheeting, shirting, toweling, etc. is white. Normally clean laundry is not as white as new and soiled laundry assumes a gray shade in various degrees. Therefore, to the laundry industry a means of determining objectively the degree of cleanliness or

(*Turn To Page* 51)

* *Soap*, Vol. XIV, No. 11, p. 24.

Soapers Fight Tax Boost

Industry Well Represented at Washington Hearing, March 6-9 . . . Oppose Adoption of Connally, Bailey and Gillette Amendments . . . Fight Proposed Increase in Excise Tax on Imported Oils from 3 to 5c . . . Cite Irreplaceability of Tropical Oils In the Soap Kettle . . . Measures Unreported by Committee as Yet

SOAPMAKERS were hurriedly called to Washington, March 6 to 9, to attend hearings before the Senate Finance Committee on amendments to the revenue bill through which domestic fat interests are seeking to increase the processing and excise tax on fat and oil imports from the present rate of 3c to a new rate of 5c per pound. The amendments were proposed by Senators Connally, Bailey and Gillette, and in a move to force prompt consideration by the Senate they were attached as "riders" to H. R. 3790, a bill dealing with taxation of the salaries of public officials and employees.

Opposition to the proposed increase at the hearings was led by administration representatives who pointed out that adoption of higher rates on oil imports would conflict drastically with the reciprocal trade agreement policy. Secretary Hull spent a whole morning on the stand and was followed by the assistant secretary, Dr. Francis B. Sayre. Opposition from the War Department and the Philippines was also expressed by Brigadier General Charles Burnett, Chief of the Bureau of Insular Affairs, who read into the record cables from President Quezon and the Philippine National Assembly in opposition to the proposed amendments.

Shortly after the close of the hearings administration opposition to the amendments was further emphasized in one of President Roosevelt's press conferences in which he declared that an increase in the vegetable oil taxes might result in creation of a tariff situation such as occurred in 1929 and produced the Hawley-Smoot Tariff Law. He said that if the legislation proposed should be adopted it might prove an opening wedge to what happened in 1929 when a very innocent little tariff bill grew into a very obnoxious measure. The President added that the proposed tax on vegetable oils would adversely affect the reciprocal trade policy.

Secretary of Agriculture Henry A. Wallace in another statement indicating administration disapproval of the proposed tax increases, told the Senate Finance Committee that adoption of the amendments would increase the margin between world prices and United States prices by two cents a pound. Part of this increase in the price spread would take the form of an increase in the domestic price, and part a decrease in the foreign price. He also stated that the higher United States prices for imported oils would increase demand for substitute oils which could be imported. These imported substitutes, however, would not be enough to entirely offset effects of decreased importations of taxed oils.

Representatives of the soap industry who submitted testimony at hearing included F. H. Merrill, Los Angeles Soap Co., Los Angeles; F. M. Barnes, Procter & Gamble Co., Cincinnati; G. A. Wrisley, Allen B. Wrisley Co., Chicago; J. A. Coulter, Colgate-Palmolive-Peet Co., Jersey City; and R. C. Edlund, Association of American Soap and Glycerine Producers, New York. John B. Gordon of the Bureau of Raw Materials for American Vegetable Oils & Fats Industries, Washington, and James D. Craig of Spencer Kellogg & Sons, Inc., Buffalo, were among others who testified in opposition to the amendments.

Letters of opposition were sent to Senators by many concerns and letters from the following were read into the record by R. C. Edlund: Iowa Soap Co., Selig Co., Fuld Bros., National Soap Co. and Flash Chemical Co.

In his testimony F. H. Merrill of Los Angeles Soap Co., indicated that the 3c excise tax now in effect has added $400,000 per year to his company's costs. It has been impossible to pass the full amount of the tax along to soap buyers, he said, as increased prices caused his company to lose twenty per cent of its sales volume. Any further increase, he indicated, however, would have to be passed along even though it meant a further drop in sales. The proposed increase would thus result in a direct tax upon the American home.

This phase of the inquiry was elaborated further in the testimony of F. M. Barnes of Procter & Gamble Co., who told the members of the committee that the proposed increase would result in a mark-up of $1.32 per 100 pounds, or a cent and a third per pound, in the cost of soap to the consumer. He indicated that the present tax has already had a definite effect in reducing American soap consumption. The soap industry, he said, has lost about 8 per cent of its tonnage since 1929, and this in a period when population has been on the increase and the standard of living has been kept very high.

He also pointed out that if soap prices are forced higher by added taxes, there is a strong possibility that use of synthetic detergents and soap substitutes would be fostered to such an extent that American producers of tallow and vegetable oils might lose a considerable por-

tion of the present market for their products in the soap kettle.

The heavy weight with which the proposed taxes would fall on the smaller soap manufacturers was emphasized in the testimony of George Wrisley of Allen B. Wrisley Co. "These higher excise taxes on coconut oil," he said, "are extra tough on the smaller soaper, because he has to have the coconut oil. The added cost must eventually be passed along to the consumer, but it takes time to pass it along and there is a transition period that is mighty tough to handle. In addition the smaller soaper is generally in the more competitive types of soap, lacking the volume of advertising or the branded names to support his sales."

In an extensive brief filed by John B. Gordon of the Bureau of Raw Materials for the American Vegetable Fats and Oil Industries, it was argued that the proposed amendments would accomplish little in aiding domestic fat and oil producers while at the same time imposing a severe burden on manufacturers and consumers of soap. Mr. Gordon pointed out that while the tax would become immediately applicable against Philippine coconut oil, it could not effect palm oil prior to January 1, 1940 nor palm kernel oil prior to January 1, 1942 due to existing trade agreements. The placing of a 2c per lb. higher processing tax on Philippine coconut oil would merely mean, he said, that all areas of the world consuming palm kernel and babassu oils would surrender their supplies to the United States replacing same with coconut oil at the lower price level which would prevail in international markets because of the inability of coconut oil to enter the American market. The passage of the Connally amendment could in no wise benefit domestic oil and fat producers because its effect could not be felt until the expiration of the British trade agreement in 1942. Its only effect up to that time would be to further impoverish the coconut oil producers of the Philippines.

The American farmer has not benefited appreciably from the taxation of oils and fats used in soap manufacture, said Mr. Gordon, since domestically produced fats do not have the necessary qualities to enable them to replace the imported tropical oils in the soap kettle. The only effect of the tax so far, he indicated, has been to add a further burden to soap manufacturers costs without diminishing the use of imported oils that have no domestic substitute. He pointed out further that the United States government receives no revenue from the coconut oil processing tax and that the tax has operated up to this point largely as a subsidy paid by American soap consumers to the Philippine government. He recommended as a solution that duty free entry be provided for denatured oils and fats intended for industrial usage, pointing out this arrangement would protect American producers of edible oils and fats while not imposing a handicap upon industrial users of imported oils.

Roscoe Edlund, manager of the Association of American Soap and Glycerine Producers, made two appearances before the committee on March 9th, the concluding day of the hearing. He elaborated further the argument originally introduced by F. M. Barnes of Procter & Gamble Company, that an increase in the processing tax might operate as an umbrella under which American producers of soapless detergents might take away a substantial part of the present market for soaps.

"I can imagine no greater harm to those American producers who look to the soap kettle for a market," he said, "than to increase, especially at this juncture, the cost of an essential ingredient which does not compete with American fats and oils in the soap kettle. . . . if you want to increase the consumption of American fats and oils in the soap kettle, take off the tax on denatured oils for soap use. If you do that, you will sell more of the soap, you will help to discourage growth of non-soap detergents and you will improve the market for American oils."

J. A. Coulter of Colgate-Palmolive-Peet followed Mr. Edlund and pointed out in his testimony that rather than replacing domestically produced fats, coconut oil in reality makes possible the use in soap of millions and millions of pounds of American produced tallow. He pointed out that when coconut oil is available to the soap maker, he can run his percentage of tallow as high as 80 per cent safely. He reiterated the testimony of previous witnesses that the lauric acid content of coconut oil is not substituted in domestically produced fats. If soap makers could have found any substitute to use in the place of coconut oil, he pointed out, they would not have been paying the tremendous processing taxes which they have borne in recent years.

In further support of the argument that domestic oils cannot be used interchangeably with coconut oil, he pointed out that many U. S. Government specifications for soaps specify that the oil content of certain soaps be pure coconut oil or pure palm kernel or a mixture thereof. The United States Navy, he pointed out, uses annually from two to two and one-half million pounds of coconut oil soap, for no other soap will give anything approaching a profuse lather in salt or hard water.

During the hearings, and following their close, representatives of the industry had a number of conferences with individual members of the committee in an attempt to further clarify the industry's position on the proposed tax increase. The amendments are still in committee as we close for press.

The indication at this time is that a majority of the committee will be against the amendments. It is predicted, however, that the proponents may insist on bringing their proposals to a vote on the Senate floor. The administration, however, is expected to use every influence to prevent a vote or to defeat the amendments if a vote is forced. Passage of the amendments would represent a serious blow to the government's Trade Agreement program.

New Products and

The "Blue Ribbon" line of International Metal Polish Co., Indianapolis, is packaged throughout in Phoenix cone top cans supplied by Phoenix Metal Cap Co., Chicago. Photo by Heetfield-Tillou.

Bubble baths are distinctly in the public eye. Pynol Co., Burlington, Iowa, has recently introduced a new one. Container by Owens.

"Jumbo" and "Solarine Bleach," products of Solarine Co., Baltimore, are topped with Armstrong's "Cel-O-Seal" bands to give extra eye-appeal. Tapered bottles are used.

Packages

Cin-Made Corp., Cincinnati, has just redesigned labels and containers for "Red Dragon," made by J. M. Harris & Co., Roanoke.

Winner of an honorable mention in the Irwin D. Wolf Packaging Awards was the insecticide floor display of McCormick & Co., Baltimore, entered by Kieckhefer Container Company, New York, N. Y.

A family resemblance characterizes the full line of glass cleaners and spotters marketed by Clark Cleaner Products, Inc., Detroit. Caps by Armstrong Cork Co., Lancaster, Pa.

News....

New Coast Soap Plant

Quality Soap Company has recently established a manufacturing plant at 2030 O Street, Sacramento, Cal. The firm makes three grades of soap which are distributed to laundries and wholesalers in that area. H. D. Staley is the manager of the new plant.

Adolph Scholler Dies

Adolph Scholler, soap manufacturer, died recently at Philadelphia at the age of 55. He was vice-president and treasurer of Scholler Bros., Inc., makers of textile soaps. He was a member of the Manufacturers and Bankers Club, Penn Athletic Club and the Manufacturers Country Club. A brother and a sister survive.

January Soap Index Up

Index numbers of employment and payrolls in the soap industry for January, 1939, moved upward according to the latest report of the U. S. Bureau of Census. The employment index was 89.1 as compared with 88.6 for December, 1938 and 87.1 for January, 1938. The pay rolls index registered 91.8 in January, 1939 as compared with 89.7 for December, 1938 and 87.5 for January, 1938.

Hagemann-Weber Soap Account

Hagemann-Weber Soap Manufacturing Co., Chicago, has recently appointed Newby, Person & Flitcraft, that city, as agency for its "Santa Maria Castile" soap. Chicago metropolitan and foreign newspapers will receive the starting schedules.

Louis H. Waltke Dies

Louis Henry Waltke, retired soap manufacturer, recently died of asthma at his apartment in the Park Plaza Hotel, St. Louis. He was 83 years old and former president of the old William Waltke & Co., soap manufacturers, founded by his father in 1858. Born in St. Louis, Mr. Waltke began working in the company when he was 18. By the time he was 30 his father had retired and he was in active charge, building up the business to its large proportions. In 1923 he severed active connection with the company which four years later was sold to Procter & Gamble Co., Cincinnati, for about $8,000,000 in a cash transaction. Surviving, are his wife, two sons and two daughters.

Louis H. Waltke

Lever Bros. vs. Lever Bros.

Chinese dealers in Singapore have been taking advantage of the favorable exchange rate in China and imported Lux soap manufactured in Shanghai by Lever Bros. (China) Ltd., is undercutting, in the Straits markets, Lux soap manufactured by Lever Bros. (Port Sunlight) Ltd. The British firm is seeking an injunction against the sales of the soap manufactured by its Chinese subsidiary on the claim that the trade mark "Lux" has been registered in the Straits Settlements for Lever Bros. (Port Sunlight) Ltd.

New Solvent for Curran

The Curran Corp., Malden, Mass., has developed a new hydrodegreasing safety solvent to be used for degreasing and deoiling metal airplane fuselage. They state that in addition to possessing excellent wetting out and solvent action upon heavy grease and carbon smut, this new solvent has "automatic emulsifying" properties. The company has also announced that "Tarlene," its tar removing product, is to be sold in a new three-color lithographed pint can.

Special Oakite Bulletin

Oakite Products, Inc., New York, have recently released a special issue of their house organ, *Oakite News Service*. The issue commemorates thirty years of activity by the company, producers of industrial cleaning materials. It contains a historical review of the development of specialized cleaning methods and materials, and how they have contributed in helping American industry.

Blair Heads Round Table

F. W. Blair, chemical director of Procter & Gamble Co., Ivorydale, Ohio, presided at the chief round table of the opening session of the Industrial Research Institute which recently held a two-day meeting at the Engineers' Club, New York. He served as chairman of the discussion among the members who are executives directing scientific research for various businesses and industries. The Institute, which is an affiliate of the National Research Council, was formed to provide laboratory research executives with a forum for discussion of their common problems. Among those attending the meeting were R. C. Newton, chief chemist, Swift & Co., Chicago; E. A. Ball, Hercules Powder Co., Wilming-

ton, Del.; A. L. Haldenstein, National Adhesives Corp., New York and James K. Stewart, director, Industrial Naphtha Research, Anderson-Pritchard Oil Corp., Chicago.

Chicago Perfumers Plan Party

At the March 14th meeting of the Chicago Perfumery, Soap and Extract Association held at the Bismarck Hotel it was voted to have a stag party on April 19th at the Stevens Hotel. A feature of the party will be the award of team and individual prizes to the winners in the association's bowling league. Walter R. Nay and Carl M. Black, co-chairmen of the entertainment committee are in charge of plans. Before adjournment of the meeting, John S. Hall, the association's attorney, reported briefly on legislative and tax developments.

Consumers Union Rates Soaps

An analysis of soap quality, comments on soap advertising and a series of ratings of various popular soaps are included in an article in March, 1939 number of *Consumers Union*. The publication advises its readers that the only function of a toilet soap is to cleanse the skin (the aesthetic values of a fragrantly perfumed bath or face tablet seem to be completely ignored); that they should buy good soap as cheaply as they can find it (a not very startling piece of advice); and that price comparisons should be made on the basis of actual dry soap in the bar (no ready method of making such computations is suggested). None of the soaps tested by CU, the readers are advised, "contained an amount of impurities sufficient to affect seriously its cleansing efficiency."

White King Sales Campaign

White King Soap Co., Los Angeles, is offering a device for weaving sweaters, scarfs, etc., as a premium, in connection with a current campaign promoting the sale of "White King" soap powder. An illustrated folder is being distributed to retail outlets.

Fortune Tells P & G Story

An article in the April issue of *Fortune* magazine reviews the history and present position in the soap industry of Procter & Gamble Co. America's largest soap producer, says *Fortune*, exudes a venerable and austere air, puts on very little side, yet is remarkably quick on the draw and in its hundred and one years of operation has experienced only one year of unprofitable operation. The article is well illustrated with scenes of raw material production, reprints of old P & G advertisements, pictures of employee groups, etc. It seems in general to present an accurate and authentic picture of the company and the soap industry, although any soap maker, we feel, would agree that the authors were somewhat unfortunate in their choice of comments when they said "Soap is essentially a simple commodity that can be made on anyone's kitchen stove." (We checked on this incidentally, and were told this wasn't meant exactly the way it sounds. Ed. Note)

New Soapless Detergent

Ermadon Products, Inc., Buffalo, are producing a new detergent in tablet form known as "D-Terge-It." They state that it is not a soap and is neither acid nor alkaline, being a neutral product and that it works equally well in hard or soft water, rinsing perfectly. The tablets are of several different kinds in order to meet various requirements. An economy feature, they say, is that the tablet may be removed from the water after each cleaning and subsequently used until entirely dissolved.

Louis J. Freundt Dies

Louis J. Freundt, for many years assistant district sales manager for the American Can Company, died March 17th in the Norwegian-American Hospital, Chicago. Mr. Freundt, who was 66 years old and had retired last December, was one of the real veterans of the can industry and had many friends throughout the country. He was active in the affairs of the Chicago Drug and Chemical Association and the Chicago Perfumery, Soap and Extract Association and upon his retirement from active business a few months ago was made an honorary member of both organizations. Surviving are his widow, a son and three daughters.

Willsmer Watkins Branch Mgr.

Dr. E. G. Thomssen, technical director of J. R. Watkins Co., Winona, Minn., who is in England at the moment supervising the installation of a new Watkins plant at Birmingham, advises us that A. G. Willsmer has just been engaged as factory manager for the new branch. Mr. Willsmer was formerly of Skuse & Co., and is well known to the British trade through his contributions to *Soap, Perfumery & Cosmetics*, British publication.

Sweetheart Soap Sales Plans

Manhattan Soap Co., New York, will again use a newspaper drive, the first in several years, to promote the sale of its "Sweetheart" soap. In addition to the newspaper campaign, which will be on a coast to coast basis, extensive radio promotion is being carried on with both spot and network broadcasts over 100 stations.

New Soap Sales Total

Due to an error in the returns of soap sales for the last quarter of 1938, the Association of American Soap & Glycerine Producers has revised its sales census compilations. The soap sales value for 1938 amounted to $254,319,605 instead of $256,477,154 as previously reported, while the last quarter of 1938 showed sales amounting to $56,802,110 instead of $58,959,659 as reported.

A. J. Hoefner Dies

Anthony J. Hoefner, owner of A. Hoefner & Sons, soap distributors, recently died at his home in Buffalo. He was 80 years of age and had been in the soap business virtually all his life, succeeding his father as head of the company.

Sodium Tetraphosphate Plant

Rumford Chemical Works, Rumford, R. I., has recently opened a new plant for the manufacture of sodium tetraphosphate. The building has been designed so that the exterior walls cover and outline the interior machinery, giving it a strictly functional appearance. The manufacture is a process of evaporating to dryness a solution of orthophosphates and heating the resulting mixture to quiet fusion at a bright red heat. The fused material, sodium tetraphosphate, is slowly cooled in a continuous stainless steel container. The small glassy beads are then ground to pass a 20 mesh screen. The entire process is automatic and continuous.

New Soap Specifications

The technical committee on detergents of the National Bureau of Standards has made several changes in U. S. specifications for certain soaps. Chief among these are changes in the packaging, packing, and marking of shipments in connection with Navy Department purchases. The soaps so affected are white, floating toilet soap (P-S-616), ordinary laundry soap (P-S-591), chip soap (P-S-566) and powdered laundry soap (P-S-596). A change has also been made in the general requirement section of the specification for potash-linseed-oil, soft soap (P-S-613). Where paragraph D-1c had read "The soap shall dissolve readily to give a 0.15 to 0.2 per cent solution, using distilled water at 10° to 15.5° C. (50° to 60° F.), the temperatures have been changed to 15.5° to 20° C. (60° to 68° F.)."

Evans Returns To England

J. R. A. Evans, director of Wilson & Mansfield Ltd., London, recently returned to England on the "Queen Mary" after a three week trip to United States. While in New York he spent about a week with Dodge & Olcott, essential oils, whose company his firm represents in England.

"The arms is busted off that other one,—guess they won't miss this leg either."

Colgate Conducts Contest

Colgate-Palmolive-Peet Co., Jersey City, has announced a nation-wide contest based on the desire of many Americans to see one or both of the World's Fairs this year. One hundred first prizes, each consisting of first-class transportation and return to either Fair, plus $150 spending money, will be awarded to the writers of the 100 best letters in 50 words or less on the subject, "I want to see the (New York) (San Francisco) World's Fair because . . ." A feature of the contest is that four different brands of toiletries are joined in the single contest "Colgate," "Palmolive," "Cashmere Bouquet" and "Vaseline." Any size of any item may be submitted with entries, giving the contest wider application. Floor displays and circulars will predominate in advertising the contest as will the company's various radio programs.

F.T.C. Cites Marlborough

The Federal Trade Commission has issued a complaint, the subjects of which are shaving creams in containers bearing fictitious prices far exceeding true selling prices, and toothpaste with misleading descriptions as to its formula and manufacture. The respondents are Marlborough Labs., Inc., Marlborough Sales Co., Madison Sales Corp. and Windsor Manufacturing Co., all of New York.

Wants Shaving Cream Agency

A firm in Cairo, Egypt, is interested in securing an agency for the sale of American manufactured shaving creams. Further details may be had by writing to the U. S. Bureau of Foreign and Domestic Commerce, referring to File No. 731.

Givaudan Synthetic Thyme

Givaudan-Delawanna, Inc., New York, is now in production on synthetic oil of thyme. This development comes at a point when stocks of natural oil of thyme have dropped almost to the vanishing point, due to the civil war in Spain, the principal producing country.

They

ALL LOOK ALIKE ON PAPER;

but . . . real merit is PROVEN by the way consumers order and reorder.

By handling Clifton products exclusively wide-awake jobbers consistently increase their sales and profits. You can do likewise.

Details for the asking on the complete line of soap bases, dispensers, deodorant cakes, disinfectants, waxes, polishes and kindred products. Inquire today from Clifton Chemical Co., 246 Front St., New York.

CLIFTON

Curtis Campaigne Dies

Curtis Campaigne, vice-president and United States sales manager of Yardley & Co., Ltd., New York, soaps and perfumes, died recently of a heart attack at his home in Montclair, N. J. He was 55 years old. Mr. Campaigne served as vice-president and sales manager of the Yardley firm for ten years. He was a member of the Montclair Golf Club, University Club of New York, and the Point o' Woods Assn. of Long Island. Surviving are his wife, two sons and a daughter.

Celebrates 20th Year

John Hanser, head of Hanser Soap Factory, Milwaukee, this year celebrates his twentieth anniversary in the soap business. He started from a very unpretentious set-up in 1919, borrowing money to start his first factory in a space about 40 by 45 feet. The amount of capital at his disposal did not permit Hanser to hire a salesman, so he did his own selling. In a short time, however, expansion was necessary and twice the plant was moved to larger quarters. Today his factory space consists of about 38,000 square feet, while employees number thirty-five. In his Milwaukee factory, Hanser makes up to 125,000 pounds of soap a week, with sales running somewhat less than half a million dollars a year. He, incidentally, is the fourth generation of a family of soap makers.

Tremblay Back on Job

L. G. Tremblay, advertising manager of the Old Dutch Cleanser division of Cudahy Packing Company, is back on the job after a month's absence because of illness.

T.G.A. To Meet May 22-24

The Toilet Goods Association will hold the 1939 convention at the Hotel Biltmore, New York, on May 22, 23, and 24. The late Charles E. Kelly was chairman of the entertainment committee, and in respect to his memory, no new chairman has been appointed for this year. L. R. Root, Scoville Manufacturing Co., is vice chairman and has announced a theatre and supper party for the first evening's entertainment, a golf tournament for the men on the following day at the Wingfoot Golf Club, and a banquet for the last night. Other members of the committee are A. C. Burgund, Carr Lowery Glass Co.; W. D. Barry, Mallinckrodt Chemical Works; Charles Fischbeck, P. R. Dreyer, Inc.; W. E. Klaas, Brass Goods Manufacturing Co.; M. Lemmermeyer, Aromatic Products, Inc.; W. P. Murray, Continental Can Co. and Karl Voss, Karl Voss Corp.

Lever Bros. and Unilever, Ltd., London, have joined the national effort to train for air raid precautions for "the next war," and in connection with this have three hundred fully trained employees with an equal number of reserves. These men are fire and gas fighters lined up on the Lever Bros. roof.

Dreyer Opens New Office

P. R. Dreyer Inc., essential oils, New York, has recently opened a branch office in Los Angeles, where complete stocks will be maintained. Edward R. Trippe, Jr. manages the new office. He started with the Charles Fischbeck Co., now consolidated with P. R. Dreyer, in the perfume and experimental departments, and gradually worked into the selling organization, covering part of metropolitan New York.

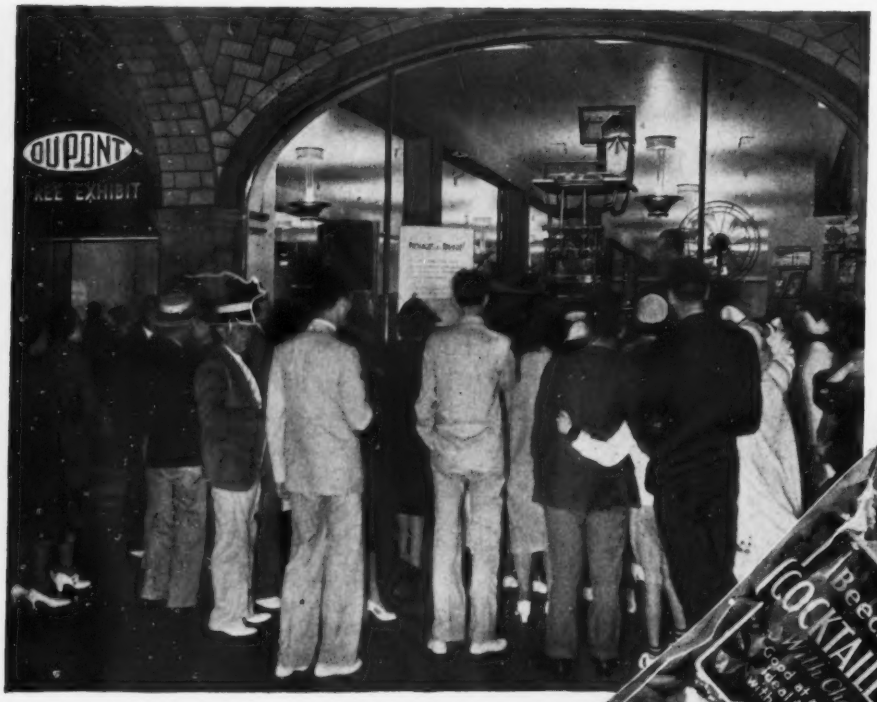
Colgate Earnings

E. H. Little, president, Colgate-Palmolive-Peet Co., recently announced in the annual report to stockholders that the company's total net profit in 1938 amounted to $4,921,921, equal to $1.77 per share of common stock after provision for preferred dividends. This was the highest net earnings since 1931 and was a substantial increase over $782,250 which was the total net profit in 1937. Sales and profits of the domestic soap market showed an improvement in 1938. The company's total domestic and foreign sales for 1938 amounted to $99,452,741, as compared with $99,991,355 in 1937.

China's Soap Hard Hit

China's soap production suffered seriously in 1937 and is believed to have been no greater than 50 per cent normal, according to reports made public by the U. S. Department of Commerce. Estimates placed the number of plants operating in the Shanghai area as less than 30, a considerable decrease from the 50 active plants prior to the outbreak of hostilities.

That STOPS 'EM...



Stokes & Smith Transwrap Packaging Machine on exhibition at the duPont exhibit in Atlantic City, N. J.

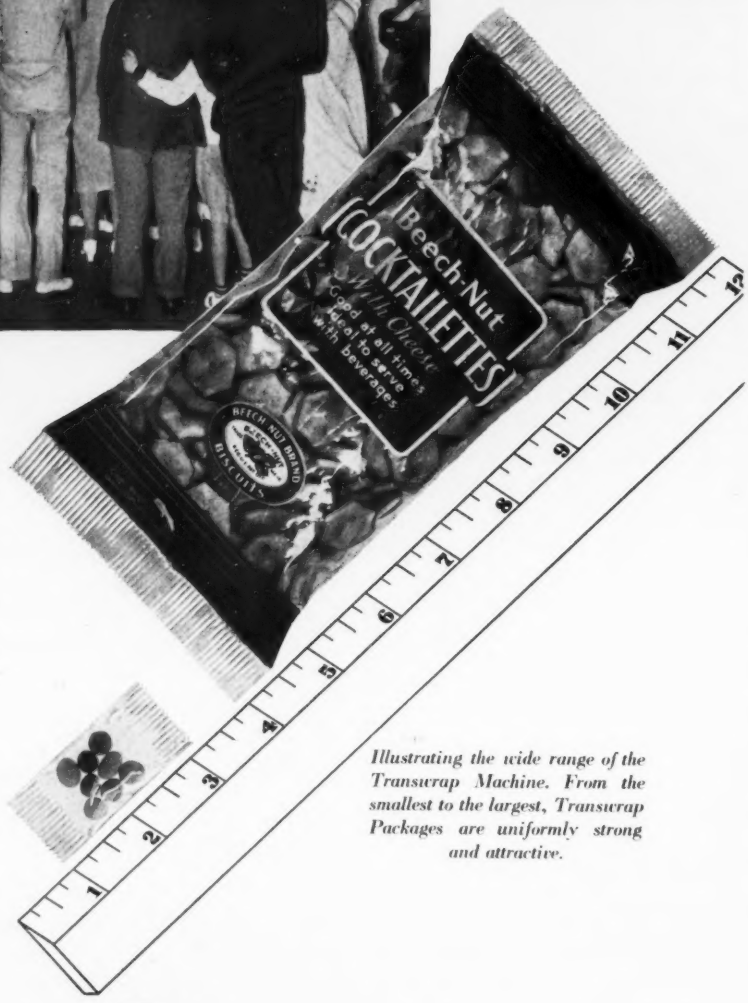
And so will your products in a...

TRANSWRAP PACKAGE

Glistening and transparent, Transwrap Packages are one of the best assets your product could have at the point of sale. Yet Transwrap Packages are remarkably economical. Employing either printed or unprinted Cellophane, run directly from the roll, they are automatically filled, formed and sealed at speeds of sixty or more units per minute.

An ideal sample package, as well as a regular production package, Transwrap Packages are available for a wide range of assorted products.

Send us samples of your product and we will return them in Transwrap Packages with full information about how the Transwrap Machine may be fitted to your requirements.



Illustrating the wide range of the Transwrap Machine. From the smallest to the largest, Transwrap Packages are uniformly strong and attractive.

STOKES & SMITH Co

PACKAGING MACHINERY — PAPER BOX MACHINERY

4915 SUMMERDALE AVE., PHILADELPHIA, U. S. A.

U. S. Soap Exports Down

The value of soaps and toiletry exports from United States to Puerto Rico and Virgin Islands dropped slightly in 1938, according to figures released by the Department of Commerce. Shipments to Puerto Rico in 1938 were valued at $1,630,000 as compared with $1,734,000 in 1937. Exports of laundry soaps were the biggest factor, amounting to $799,000 in 1938; toilet soaps were next with a value of $196,000. Total shipments to the Virgin Islands had a value of $36,000 in 1938 as compared with $41,000 in 1937. Laundry soaps accounted for $18,000 and toilet soaps for $6,000 in 1938.

Jean Phillipe Chuit Dies

Following a long illness, Jean Philippe Chuit, founder and former head of Chuit, Naef & Co., Geneva, Switzerland, died at Geneva at the age of 73. Mr. Chuit had not been active in the successor firm, Firmenich & Cie, for the past decade. He was, however, largely responsible for all of the contributions made to synthetic aromatic chemistry by his firm, and established himself as an outstanding authority on the chemistry of perfumes. Firmenich & Cie are represented in United States by Firmenich & Co., New York.

Chemical Show Dec. 4-9

Announcement has been made that the Seventeenth Exposition of Chemical Industries will be held this year at Grand Central Palace, New York, during the week of December 4 to 9. At the last exposition in 1937, the total registered attendance was 46,290, an all-time record. Indications already point to another such attendance.

Chlorine Institute Elects

The Chlorine Institute, at its annual meeting held recently at the Chemists Club, elected the following directors to serve for two years: N. E Bartlett, Pennsylvania Salt Mfg. Co.; Thomas Coyle, R. & H. Chemicals Dept., E. I. du Pont de Nemours & Co.; John A. Kienle, Manhattan Alkali Works, Inc.; Louis Neuberg, Westvaco Chlorine Products Corp., and Eli Winkler, Columbia Alkali Corp. Holdover directors of the institute are H. M. Hooker, Hooker Electrochemical Co.; S. W. Jacobs, Niagara Alkali Co., and E. C. Speiden, Innis Speiden & Co.

New Detergent Product

Cowles Detergent Co., Cleveland, has recently announced a new product "Drymet," which is commercial sodium metasilicate in powdered form. The company states that it is readily soluble in all the practical concentrations and at all practical temperatures, that its total alkalinity as Na_2O is approximately 51 per cent, and that a .06 per cent solution yields a pH of 11.5. The company further says that it can be mixed with, and improves the effectiveness of most materials commonly used in alkaline cleaning compounds such as soaps, sodas, phosphates, etc.

Changes at Mathieson

George W. Dolan, assistant to the president, Mathieson Alkali Works, New York, recently became a member of the board, relinquishing his title as assistant general sales manager. DeWitt Thompson, formerly manager of the consignment department has been named to fill this position, while Charles H. Larson, in turn, succeeds Mr. Thompson.

Detrex Sheet Metal Division

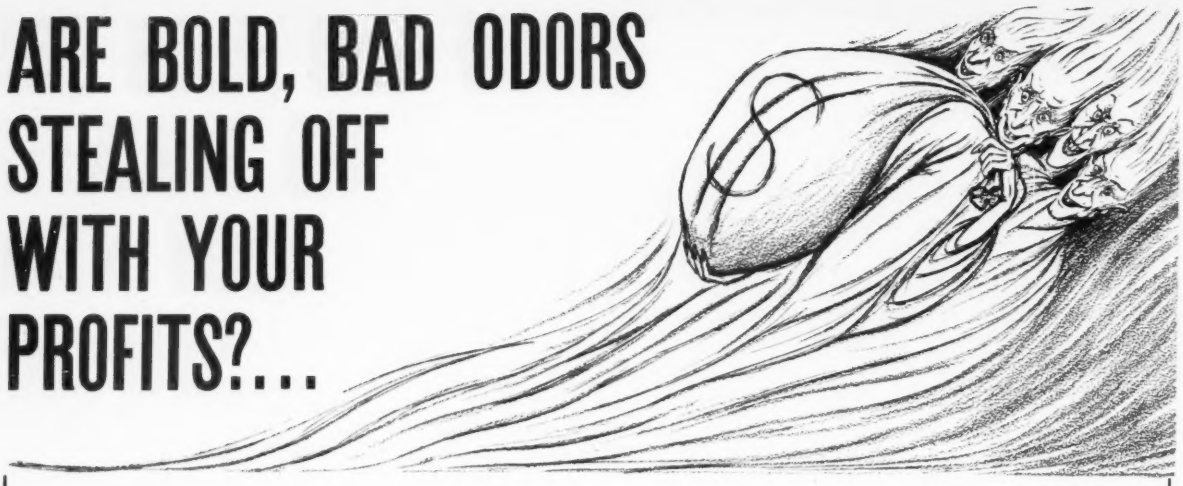
Detroit Rex Products Co., Detroit, has expanded its sheet metal manufacturing division, of which I. J. Belanger has been appointed manager. Included under this division are the manufacturing, marketing, installation and servicing of industrial oven equipment, alkali washers and stripping machines, and general sheet metal works such as tankage, bins, etc. This division will also have supervision of spray booth installations.

Guenther Completes Trip

After an absence of more than nine months, Dr. Ernest Guenther, chief research chemist of Fritzsche Bros., Inc., recently returned to his desk in New York headquarters. Since his departure from the United States last May he had made a complete circuit of the globe, surveying essential oil production in India, Ceylon, Siam, French Indo China, British Malay and the Dutch East Indies, Australia, China, Manchukuo, Japan and the Philippines. Among those oils surveyed were palmrosa, lemongrass, citronella, cassia, eucalyptus, vetivert and cajeput. He took ten thousand feet of colored motion pictures which will be used to supplement his lectures planned for the coming Spring and Fall.

Inside View of a Java Citronella Distillery Visited by Dr. Guenther on His Recent Trip.

ARE BOLD, BAD ODORS STEALING OFF WITH YOUR PROFITS?...



. . . Driving away prospects? . . . Robbing you of sales? If they are, here's how you can stop them: Treat your product with

NEUTROLEUM

Let this powerful aromatic help you rid your product of these repellent rogues; let it add new impetus to your sales—quickly, effectively and economically!

NEUTROLEUM is being used successfully today in hundreds of different technical products — in fly sprays, insecticides, polishes, waxes, para blocks, naphthalene cleansers, solvents, diluents and many others. It is helping to build increasing sales for these important products by eliminating their one common enemy — unpleasant odor.

Therefore, if your product's odor is disagreeable to the point of costing you sales, why not send us a sample and let us show you how effectively NEUTROLEUM can help you . . . and how inexpensively! You will be under no obligation, we assure you.

ALMOND No. 7
BOUQUET No. 149
(Vanilla type—for use around foodstuffs)
HONEY No. 6
HONEYSUCKLE No. 15
LAVENDER No. 29
ORIENTAL No. 17
PINE No. 14
WISTARIA No. 11

ANIMATE YOUR FLY SPRAY SALES WITH THESE LIVE, REFRESHING ODORS . . .

. . . if you want them to appeal to the most critical and fastidious users. The perfumes in the accompanying group have been selected for their dependable coverage and individuality of fragrance. Write us for samples, specifying odors preferred.

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BRANCH STOCKS

BOSTON CHICAGO LOS ANGELES ST. LOUIS TORONTO, CANADA MEXICO, D. F.

FACTORIES AT CLIFTON, N. J. AND SEILLANS (VAR) FRANCE

Chicago Drug Assn. Nominates

The nominating committee of the Chicago Drug and Chemical Association, appointed by president Robert L. Holland, has nominated the following to hold office during 1939: for president, Elmer F. Smith, American Aniline Products Co.; for vice-president, C. L. Drum, Owens-Illinois Glass Co.; for secretary, Walter R. Nay, Mallinckrodt Chemical Works; for treasurer, J. M. Gillet, Victor Chemical Works. The following were nominated for directors for two year term: George A. Wrisley, Allen B. Wrisley Co.; H. F. Woulfe, Pepsodent Co.; W. F. Bahe, Parke Davis and Co., and R. C. Jennings, New York Quinine and Chemical Works. Election of officers was to be held on March 30th at the annual business meeting at the Chicago Athletic Association.

Essential Oil Imports

During the fourth quarter of 1938 the United States imported $220,038 worth of essential oils from France, according to figures just released by the Bureau of Foreign and Domestic Commerce. This was slightly lower than the total reported for the last quarter of 1937. Imports of lavender oil were at the head of the list being valued at $58,970 with jasmine essence next, at $50,840.

Morny Soap Drive

Morny, Ltd., London, has started an advertising campaign in national magazines for Morny soap. M. K. Cohen, New York, is United States distributor.

Polak & Schwarz Jubilee Book

Polak & Schwarz, Inc., essential oils, Holland, have recently published a handsome Jubilee Book on the occasion of their fiftieth anniversary. The book is contained in an attractively bound leather desk folder and depicts the development of the firm from the time of its founder, Leopold Schwarz, to the present day. Several pages are in memoriam to Samuel Schwarz who was managing director of the firm and died practically on the eve of the anniversary.

PRICE'S STEARIC ACID

Triple Pressed

PREPARED FROM THE FINEST MATERIALS AND ENTIRELY FREE FROM ADULTERANTS

PRICE'S *triple pressed* STEARIC ACID is used by leading manufacturers of the finest toilet preparations, shaving creams and toilet soaps.
Of guaranteed English manufacture, it is highly crystalline and white in color.
Melting point is 130°-133° Fahrenheit.
World famous for its unvarying uniformity in quality.
Packed in slabs of about one inch thickness in double burlap bags with a third protective inner bag forming a muslin liner.

Quotations for carloads or less upon application to exclusive American Representatives:

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MANUFACTURED BY PRICE'S OF LONDON, ENGLAND

Contracts Awarded

Washington Soap Bids

J. Eavenson & Sons, Camden, N. J., submitted the low bid of 6.12c on 37,500 lbs. grit soap at a recent opening by the Treasury Procurement Supply Division at Washington, D. C. Iowa Soap Co., Burlington, Iowa, bid low on 4,400 lbs. toilet soap at 9.2c in another opening by the same division.

Washington Creosol Bid

Crystal Soap & Chemical Co., Philadelphia, bid low on 7,500 gals. saponated solution creosol at $5,649.75 f.o.b. in a recent opening by the Veterans Administration Procurement Division at Washington, D. C. They also bid low on 2,750 gals. of the same material at $2,005.58 f.o.b.

Washington Soap Bids

Colgate - Palmolive - Peet Co., Jersey City, submitted the low bid of 8.16c on 9,000 lbs. milled soap in a recent opening by the Treasury Procurement Supply at Washington, D. C. Armour & Co., Chicago, was low with a bid of 9.42c on 1,008 lbs. tar soap. In a more recent opening Unity Sanitary Supply Co., New York, bid low on 2,200 lbs. toilet soap at 16.5c.

Veterans Soap Bid

James Good, Inc., Philadelphia, submitted the low bid of $906 on 10,000 lbs. green soap in a recent opening by the Veterans Administrative Procurement Division at Washington, D. C.

Soap Powder Bid

National Milling & Chemical Co., Philadelphia, bid low on 3,000 lbs. soap powder at 2.14c in a recent Treasury Procurement Supply opening at Washington, D. C.

Air Corps Soft Soap Award

R. M. Hollingshead Corp., Camden, N. J., was awarded the contract on 98,000 lbs. soft soap at 3.79c in a recent opening by the Army Air Corps Supply Division at Wright Field, Ohio.

Panama Canal Bids

Procter & Gamble Distributing Co., Baltimore, bid low on 10,000 lbs. soap powder at $314 in a recent opening for the Panama Canal at Washington, D. C. In the same opening, Newell Gutradt Co., San Francisco, submitted the low bids of $271.88 on 3,750 lbs. toilet soap and $243.75 on 7,500 lbs. laundry soap. Other concerns that bid low were: Mitchell Rand Mfg. Co., New York, on 2,000 lbs. floor wax at $148 and Stevens Soap Corp., Brooklyn, on 10,000 lbs. trisodium phosphate at $411.

Treasury Supply Soap Bid

J. Eavenson & Sons, Camden, N. J., bid low on 100,000 lbs. soap at 1.73c in a recent opening by the Treasury Procurement Supply at Washington, D. C.

Jeffersonville Soap Bids

Hewitt Soap Co., Dayton, Ohio, bid low on 7,300 lbs. soap chips at 7.85c lb. in a recent opening by the U. S. Army Quartermaster at Jeffersonville, Ind. Other low bids at the same opening were Hunnewell Soap Co., Cincinnati, on 13,477 cakes grit soap at 2c per cake, and Colgate-Palmolive-Peet Co., Jersey City, on 146,494 lbs. laundry soap at 3.2c per lb.

Form Packaging Institute

An official announcement has been made of the formation of the "Packaging Institute" comprising an amalgamation of two important associations in the packaging industry —the Packaging Machinery Manufacturers Institute and the Production Managers' Association. While each association will continue to function individually, as in the past, joint meetings will also be scheduled. H. H. Leonard, president of the Packaging Machinery Manufacturers Institute, who is also president of Consolidated Packaging Machinery Corp., and Wm. Bristol, president of the Production Managers Association, who is also vice-president of Bristol-Myers Co., state that a new directorate and new officials for the "Packaging Institute" will shortly be announced.

N. Y. Consumer Protection Act

A comprehensive bill entitled "The Consumers' Protection Law" providing for establishing a consumers' bureau in the New York City Board of Health has recently been introduced into the City Council. The bill would require every manufacturer of a proprietary food, drug, or cosmetic to register his product with the consumers' bureau. A proprietary product is defined as one in which there is a distinctive name or secret formula owned by the proprietor. An annual fee of ten dollars is imposed by the bill for each registration.

Fat and Oils Consumption

Soap factory operations in the United States consumed 1,468,535,000 pounds of primary animal and vegetable fats and oils in 1938, according to a recent bulletin issued by the Department of Commerce. At the head of the list was inedible tallow of which 702,267,000 pounds was consumed. Others near the top of the list were coconut oil with 342,982,000 pounds; grease, 96,356,000 pounds; palm oil, 91,642,000 pounds; fish oils, 79,874,000 pounds; marine animal oils, 66,080,000 pounds and palm-kernel oil, 29,498,000 pounds.

New Cleanser Warehouse

Holly Products Co., cleaning powders, Los Angeles, is preparing to build a new reinforced concrete and brick warehouse, adjacent to its plant at 48th Street and Vernon Avenue. The new structure will cover an area of 103 x 126 feet and will cost $19,000.

"If you studied all cans as I have you'd know cans are *not* all alike. Moreover, when we buy from American Can we can *depend* on getting deliveries, and *when* we need them. We won't need to worry about *quality.* Their engineers and research men know can-making; what's best for each of our items. And they know lithography. They study our *needs*—and ways their containers can help us become more successful. It's a load off *our* minds to buy from them . . . and their price and service and helpfulness make it *profitable* for us."

CANCO AMERICAN CAN COMPANY, 230 PARK AVENUE, NEW YORK, N. Y.

New Trade Marks

The following trade-marks were published in the February issue of the *Official Gazette* of the United States Patent Office in compliance with Section 6 of the Act of September 20, 1905, as amended March 2, 1907. Notice of opposition must be filed within thirty days of publication. As provided by Section 14, fee of ten dollars must accompany each notice of opposition.

Trade Marks Filed

CYCLOPAN—This in solid letters describing cleaning preparation for unspun wool. Filed by General Dyestuff Corp., New York. Oct. 14, 1938. Claims use since Oct. 4, 1938.

PINE VIVO—This in solid letters inside of circle, describing soap. Filed by Misenta Pine Products, Inc., Buffalo, Oct. 18, 1938. Claims use since Sept. 1, 1938.

NYMOC—This in solid letters describing cleaning preparation. Filed by Nymoc Products Co., Toronto, Nov. 21, 1938. Claims use since Oct., 1931.

ROTOTOX—This in solid letters in relief, describing insecticidal sprays. Filed by The Rototox Co., East Williston, N. Y., Oct. 24, 1938. Claims use since Nov. 1, 1932.

HY-G—This in outline letters describing insecticides. Filed by Great Northern Chemical Co., San Francisco, Dec. 7, 1938. Claims use since May, 1927.

MCCONNON 114Y — This in solid letters with McConnon above 114Y, describing insecticidal plant spray. Filed by McConnon & Co., Winona, Minn., Dec. 28, 1938. Claims use since Aug. 8, 1938.

SHUR-TRED — This in script letters describing liquid polish. Filed by S. C. Johnson & Son, Inc., Racine, Wis., Jan. 18, 1939. Claims use since Oct. 14, 1938.

E L — This in shaded block letters, each within a circle, describing cleaning compound. Filed by Economics Laboratory, Inc., St. Paul, Jan. 16, 1939. Claims use since Sept. 1, 1938.

SPRAYSHEEN — This in solid letters describing cleaning preparation. Filed by Pioneer Manufacturing Co., Cleveland, Dec. 30, 1938. Claims use since Oct. 1, 1935.

"99 PLUS"—This in solid letters describing insecticide. Filed by Alfred Turman, New York, Oct. 10, 1938. Claims use since Mar. 1, 1934.

ROTOBAC—This in solid letters describing insecticide. Filed by Thomas Rotobac Co., Cadbourn, N. C., Dec. 22, 1938. Claims use since July 19, 1935.

SORAPON — This in solid letters describing washing agent. Filed by General Dyestuff Corp., New York. Jan. 10, 1939. Claims use since Dec. 23, 1938.

FILMFAST — This in stenciled letters describing spray compound for improving the distribution of insecticidal sprays. Filed by General Chemical Co., New York, May 9, 1938. Claims use since Feb. 9, 1938.

CLIX—This in outlined letters within circle of contrasting color describing cleansing solvent for drain pipes. Filed by Hunter-Nothcott Chemical Laboratories, Los Angeles, Jan. 19, 1939. Claims use since Mar. 1, 1934.

TICKMASTER — This in solid letters describing insecticides. Filed by George A. Morty Co., Miami, Jan. 27, 1939. Claims use since Nov. 30, 1938.

MILL-O-CIDE — This in solid letters describing insecticides. Filed by Midland Chemical Laboratories, Inc., Dubuque, Iowa, Feb. 3, 1939. Claims use since Jan. 17, 1929.

TETROX—This in solid letters describing cleansing compound. Filed by Economics Laboratory, Inc., St. Paul, Jan. 16, 1939. Claims use since Sept. 1, 1938.

OLIVE OIL SOAP POWDER—This with "Olive Oil" in script letters above a wreath under which is "Soap Powder" in solid letters, describing soap powder. Filed by Home Soap Co., North Haledon, N. J., Oct. 25, 1938. Claims use since April 1, 1938.

MINERALITE — This in solid letters describing plant spray. Filed by Agricultural Insecticide Co., Belle Glade, Fla., Jan. 16, 1939. Claims use since March 17, 1936.

STEEPLE CHASE—This in solid letters describing cleansing cream. Filed by Castilian Products Corp., Los Angeles, Feb. 6, 1939. Claims use since Dec. 10, 1938.

Trade Marks Granted

364,574. Cleaning Preparation. Pioneer Co., Louisville, Ky. Filed September 12, 1938. Serial No. 410,481. Published November 29, 1938. Class 4.

364,576. Cleaning and Degreasing Compound. Sinclair Refining Co., New York. Filed September 14, 1938. Serial No. 410,558. Published November 22, 1938. Class 4.

364,596. Cleaning Preparation. Vapoo Products Co., Inc., New York, N. Y. Filed September 27, 1938. Serial No. 411,040. Published November 22, 1938. Class 4.

364,609. Soaps. Skat Co., Hartford, Conn. Filed September 30, 1938. Serial No. 411,139. Published November 22, 1938. Class 4.

364,615. Soap. Beach Soap Co., Lawrence, Mass. Filed October 3, 1938. Serial No. 411,205. Published November 29, 1938. Class 4.

364,616. Powdered Hand Soap. Industrial Soap Co., St. Louis. Filed October 3, 1938. Serial No. 411,224. Published November 29, 1938. Class 4.

364,750. Flushing Powder for Closet Bowls. Derris, Inc., New York. Filed August 18, 1938. Serial No. 409,725. Published December 6, 1938. Class 4.

364,786. Cleanser. Patent Cereals Co., Geneva, N. Y. Filed September 12, 1938. Serial No. 410,475. Published December 6, 1938. Class 4.

COMPARE the Anchor Amerseal Cap from any angle—analyze its sealing efficiency, economy of initial cost, ease and speed of application either by hand or machine; note its ease of removal and its trim appearance—and you will find that it more completely meets all of your varied requirements than any other lug or continuous thread type of closure. Samples of caps, and glass containers too, if required, will gladly be supplied free of charge for test purposes. ANCHOR CAP & CLOSURE CORPORATION, Long Island City, N. Y. and Toronto, Canada. *Closure Division of Anchor Hocking Glass Corporation.*

ANCHOR HOCKING GLASS CAPS
-an unbeatable combination

Beacon Caps, too

BEACON CAPS, TOO—Similar to Amerseal Caps in that they apply and remove with a simple quarter turn. However, in this case the lugs are turned in, thus providing a smooth, sleek skirt and exterior.

364,866. Washing Powders. Minnesota Chemical Co., St. Paul. Filed October 13, 1938. Serial No. 411,582. Published December 6, 1938. Class 4.

364,867. Detergents. Minnesota Chemical Co., St. Paul. Filed October 13, 1938. Serial No. 411,583. Published December 6, 1938. Class 4.

364,926. Cleaner Soaps. B. F. Goodrich Co., Akron, Ohio. Filed January 5, 1938. Serial No. 401,566. Published December 13, 1938. Class 4.

364,934. Washing Powder. Procter & Gamble Co., Cincinnati. Filed February 16, 1938. Serial No. 403,091. Published December 13, 1938. Class 4.

364,962. Liquid Wax. Biff Manufacturing Co., Pueblo, Colo. Filed July 11, 1938. Serial No. 408,390. Published December 13, 1938. Class 16.

364,993. Rat Exterminator. Andrew Wilson Inc., Springfield, N. J. Filed August 27, 1938. Serial No. 410,054. Published November 29, 1938. Class 6.

364,994. Preparation for Destroying Insects. Andrew Wilson Inc., Springfield, N. J. Filed August 27, 1938. Serial No. 410,055. Published November 29, 1938. Class 6.

365,015. Disinfectants and Germicides. Baird & McGuire, Inc., Holbrook, Mass. Filed September 15, 1938. Serial No. 410,576. Published November 29, 1938. Class 6.

365,069. Germicidal and Fungicidal Preparations. Medical Chemicals, Inc., Baltimore, Md. Filed October 5, 1938. Serial No. 411,303. Published December 6, 1938. Class 6.

365,236. Soaps and Soap Preparations. Sahuara Chemical Co., Downey, Calif. Filed October 17, 1938. Serial No. 411,698. Published December 20, 1938. Class 4.

365,308. Soy Bean Insecticides. Soy Bean Processing Co., Westfield, Waterloo, Iowa. Filed November 15, 1937. Serial No. 399,781. Published February 8, 1938. Class 6.

365,365. Cleaning Preparation for Automobiles. Ivano Inc., Chicago. Filed September 9, 1938. Serial No. 410,395. Published December 27, 1938. Class 16.

365,435. Liquid Solution for Cleaning. Barton Chemical Co., Chicago. Filed October 21, 1938. Serial No. 411,851. Published December 13, 1938. Class 6.

365,569. Cleaning Compound. RoC Chemical Concern, Council Bluffs, Iowa. Filed June 13, 1938. Serial No. 407,452. Published January 3, 1939. Class 4.

365,684. Polishing Compound. Oriental Rouge Co., Bridgeport, Conn. Filed October 27, 1938. Serial No. 412,112. Published January 3, 1939. Class 4.

365,687. Alkaline Detergent. Cowles Detergent Co., Cleveland. Filed October 29, 1938. Serial No. 412,174. Published January 3, 1939. Class 4.

365,782. Water Softener. Sears, Roebuck and Co., Chicago. Filed October 2, 1937. Serial No. 398,065. Published December 27, 1938. Class 6.

365,787. Automobile Wax and Polish. All-Wax Products Co., Irvington, N. J. Filed December 24, 1937. Serial No. 401,323. Published November 29, 1938. Class 16.

365,813. Disinfectant and Water Softener. Hiaid Products Co., Milwaukee. Filed June 30, 1938. Serial No. 408,058. Published December 27, 1938. Class 6.

365,872. Water - Softening Chemicals. General Dyestuff Corp., New York. Filed October 19, 1938. Serial No. 411,775. Published December 27, 1938. Class 6.

365,884. Insecticides. Doggett-Pfeil Co., Springfield, N. J. Filed October 24, 1938. Serial No. 411,987. Published January 3, 1939. Class 6.

365,891. Insecticides. General Chemical Co., New York. Filed October 28, 1938. Serial No. 412,132. Published January 10, 1939. Class 6.

365,918. Insecticides. Central Chemical Corp., Hagerstown, Md. Filed November 7, 1938. Serial No. 412,437. Published January 10, 1939. Class 6.

Wash Test Methods

(*From Page* 31)

whiteness assumes considerable importance.

Laundry, not possessing a smooth surface will never give accurate values when checked in direct reflected light as is employed in some photometers. The use of diffused light is essential. This means that the light must be reflected to all sides of the surface of the swatch and at all angles. If direct reflected light is used, the light strikes only certain parts of the swatch and is reflected at the same angle. Thus, if various instruments are used, each reflecting light at a different angle, comparable results are not obtainable. In addition, using direct reflected light only a part of the light is reflected as certain areas of the swatch surface are in a shadow. When diffused light is used, *all* points of the swatch surface are struck and more absolute values are reflected which assures greater uniformity of results. As swatches are usually visually compared under normal daylight which is diffused light, it is apparent that the diffused light method employed in the reflectometer approximates average conditions.

Any number of factors in modern laundry procedure can upset uniformity of production. The photoelectric reflectometer methods present a means for easily and quickly checking the efficiency of soaps, cleansing materials, and washing procedure to a degree hitherto impossible with visual methods of control. The visual error, the personal element, is eliminated with the use of the reflectometer. The photoelectric method for testing the efficiency of cleansing compounds and equipment is being employed more widely by laundries and detergent manufacturers, as it serves as a definite means of laundry production control, as well as a means of constant comparison with competitive products.

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Gramercy Chemical Co., sanitary chemicals, has recently moved to larger quarters at 161 Ashland Place, Brooklyn, N. Y.

TECHNICAL NAME: Sodium Pyrophosphate, Anhydrous

FORMULA: $Na_4P_2O_7$

PHYSICAL PROPERTIES: A white powder, soluble to the extent of 7 parts in 100 parts of water at 80° F., and 40 parts in 100 parts of water at 212° F. It is mildly alkaline, a 1% solution having a pH of approximately 10.1.

GRADES OR STRENGTHS: Standard powder, 100% thru 20 mesh, 90% minimum thru 100 mesh. The minimum P_2O_5 content is 52.5%.

PACKING: Barrels, paper lined, net wt.—375 lbs.
Multiwall paper bags, net wt.—100 lbs.

SHIPPING REGULATIONS: None.

PRINCIPAL USES: In the manufacture of soap and soap powders, household, metal and other cleaning compounds; as a detergent in the textile industry; as a dispersing agent in the manufacture of pigments, paints and ceramics.

● Tetrasodium Pyrophosphate embodies several important characteristics that place it in an almost unique category among products used for manufacturing soaps and cleansers. The more important of these are its water-softening properties, the ability to deflocculate and emulsify, and the highly unusual property of dissolving and retaining in solution many compounds that are often precipitated from soaps and alkalies in normal wash solutions.

Tetrasodium Pyrophosphate is not a new product, nor is the use of alkali pyrophosphates in the manufacture of soaps and lyes a new development. However, in recent years there has arisen a definite new interest in the characteristics of the alkali pyrophosphate group. Activity in this connection dates back to the work of J. H. Gladstone who reported in 1867 that many insoluble phosphates of metals such as copper, iron, manganese, aluminum, etc. could be converted to soluble double salts by treating them with an excess solution of Tetrasodium Pyrophosphate. The use of alkali pyrophosphates in the manufacture of soaps and lyes was noted by G. H. Bernard in 1907.

As a soap builder in the manufacture of soaps, soap powders, household cleansers and other cleaning compounds, the combined chemical characteristics of Tetrasodium Pyrophosphate have proven extremely valuable. The relatively low pH, which is almost equivalent to neutral soap, makes it particularly adaptable for use in fine soaps and detergent compounds where the use of stronger alkalies is not practical.

Tetrasodium Pyrophosphate is also being widely used in many industrial operations. In the textile industry it is employed as a stabilizer with sodium and other peroxides in certain bleaching processes, in the "degumming" of cotton and silk, and in the cleaning of rayon and wool. The deflocculating and dispersing properties of Tetrasodium Pyrophosphate are being successfully utilized in the manufacture of paints, pigments and ceramics to cause complete dispersion of the pigment or to produce a more uniform slurry in the grinding.

General Chemical Company first manufactured Tetrasodium Pyrophosphate in 1915. Since that time, General Chemical research has been responsible for many improvements in the manufacture of this chemical. These improvements have resulted in the more economical production of a uniform, high-grade product which is now being put to wide use by many industries.

Raw Material Markets

As of March 27, 1939

NEW YORK — The soap and sanitary chemical raw material market showed more price changes for the period just ended, than during the previous period. These changes, however, did not exhibit any definite trend in the market as the reductions and advances were scattered. In the chemical list, rosin was the only noteworthy change. Linseed oil and coconut oil showed slight advances in the oil and fat group, while others in this market countered with small reductions. The perfuming materials market seemed to be on the up-grade with things in general looking definitely better, while insecticide materials held the price changes noted during the previous period.

CHEMICALS

Butyl Alcohol

Butyl alcohol and butyl acetate have been reduced ½ cent per pound, establishing tank car prices for both articles at 7½ cents. Carlot quantities are now available at 8½ cents, and l.c.l., at 9 cents. This reduction is surprising in view of the fact that earlier in the period manufacturers had announced that prices for the first two months of the year would be extended over the coming quarter. Competition, according to reports, is very keen, which leads to the belief that the price cutting may lead to a re-adjustment in the prices of some of the higher alcohols.

Triethanolamine

Worthy of note was the reduction this period in the price range of triethanolamine. The limits have dropped from 20 and 22 cents a pound to 19 and 20 cents a pound.

Carbon Tetrachloride

A satisfactory inquiry was reported in the carbon tetrachloride market this period, although the limits of the price range showed no change. There was a change within the limits however when the price was raised 7 cents per gallon in Zone 3, which includes Montana, Wyoming, Colorado, New Mexico and Texas. This was due to the high freight charges and long hauls existing in this area.

Rosins

There was an upward trend in the price of rosin, this period, with increases of 30 to 60 cents a barrel on some grades. There was also an increase in the quantity of rosin exports, with Japan reported the heaviest buyer. Activity in domestic markets increased as the period progressed.

OILS AND FATS

Linseed Oil

Prices in the linseed oil market this period advanced about ½ cent on raw oil, both in barrels and tanks and also on boiled oil in five barrel lots. The increase in prices, however, failed to bring any difference in the attitude of consumers and dealers. Crushers, although needing material badly, were more interested in production for the coming season than they were in their current make of oil.

Cottonseed Oil

Speculative operations in the cottonseed oil market slowed down during this period, probably due to the uncertainty concerning the proposed increase in processing taxes on imported vegetable oils following the action of several important government officials in opposing the plan. Prices remained unsettled, however, changes being frequent and sometimes sharp.

Chinawood Oil

The chinawood oil market held an easier tone this period, with few developments of interest in domestic markets. Total January exports of tung oil from Hongkong were 7,329,951 pounds, of which 6,627,009 pounds were consigned to the United States.

Coconut Oil

There was a slight advance in the price of coconut oil but this market, on the whole, was quiet and steady. Buyers were inclined to hold off and wait for further developments on the proposed increase in the processing tax.

PERFUMING MATERIALS

Citronella Oil

Exports of Java oil in 1938 amounted to 2,081 metric tons as against 1,574 metric tons in 1937. Because the 1937 crop was small, prices advanced sharply at the beginning of 1938, and higher prices tended to increase the size of the next crop sharply. The low prices now in existence are expected to work in the other direction resulting in a sharp reduction in acreage from which the next crop will be produced. In the face of the low Java price, Ceylon oil advanced about 2 cents per pound giving this market a much firmer tone.

Geranium Oil

The price range of Turkish oil of geranium increased 10 cents per pound this period the new quotations being from $2.00 to $2.25 per lb. Algerian oil held the reduction reported in the previous period with Bourbon oil still priced somewhat cheap.

Patchouli Oil

Due to competition in business for patchouli oil in March, the values favored the buyer in this market. The decrease in the price range amounted to 25 cents, the present range being from $3.50 to $6.00 a pound.

Cajeput Oil

The market for cajeput oil showed an advance last period, and is now at 48 to 50 cents per pound. The range for the previous period was 42 to 45 cents per pound.

Raw Material Prices

(As of March 27, 1939)

Minimum Prices are for car lots and large quantities. Price range represents variation in quotations from different suppliers and for varying quantities.

Chemicals

Acetone, C. P., drums	lb.	$ .05¾	$ .06¼
Acid, Boric, bbls., 99½%	ton	106.00	138.00
Cresylic, drums	gal.	.63	.64
Low boiling grade	gal.	.69	.71
Muriatic, C. P., carboys	lb.	.06½	.08
Oxalic, bbls.	lb.	.10¾	.12
Adeps Lanae, hydrous, bbls.	lb.	.16	.18
Anhydrous, bbls.	lb.	.17½	.19
Alcohol, Ethyl, U.S.P., bbls.	gal.	4.56½	4.59½
Complete Denat., SD 1, drums, ex.	gal.	.27½	.30½
Alum. Potash lump	lb.	.036	.038
Ammonia Water, 26°, drums	lb.	.02	.02¼
Ammonium Carbonate, tech., bbls	lb.	.08	.12½
Bentonite 1, works	ton	—	16.00
Bentonite 2, works	ton	—	11.00
Bleaching Powder, drums	100 lb.	2.25	3.35
Borax, pd., cryst., bbls., kegs	ton	58.00	74.00
Carbon Tetrachloride, car lots	gal.	.66½	.83
L. C. L.	gal.	.73	1.17
Caustic, see Soda Caustic. Potash Caustic			
China Clay, filler	ton	10.00	25.00
Cresol, U.S.P., drums	lb.	.10	.10½
Creosote Oil	gal.	.13½	.14½
Feldspar (200 to 325 mesh)	ton	14.00	15.00
Formaldehyde, bbls.	lb.	.05¾	.06¼
Fullers Earth	ton	10.00	30.00
Glycerine, C. P., drums	lb.	.12½	.13
Dynamite, drums	lb.	—	Nom.
Saponification, drums	lb.	.09	.10
Soap, lye drums	lb.	.07½	.07¾
Hexalin, drums	lb.	—	.30
Kieselguhr, bags	ton	—	35.00
Lanolin, see Adeps Lanae.			
Lime, live, bbls.	per bbl.	—	2.45
Mercury Bichloride, kegs.	lb.	.99	1.13
Naphthalene, ref. flakes, bbls.	lb.	.05¾	.06
Nitrobenzene (Mirbane) drums	lb.	.08	.09
Paradichlorbenzene, bbls., kegs	lb.	.12½	.15½
Petrolatum, bbls. (as to color)	lb.	.02⅝	.03⅞
Phenol (Carbolic Acid), drums	lb.	.14½	.15½
Pine Oils, bbls.	gal.	.50	.54
Potash, Caustic, solid	lb.	.06¼	.06¾
Flake, 88-92%	lb.	.07	.07½
Liquid, 45% basis	lb.	.03⅛	.03¼
Potassium Carbonate, solid	lb.	.06½	.06¾
Liquid	lb.	.03	.03½
Pumice Stone, powder	100 lb.	3.00	4.00
Rosins (600 lb. bbls. gross for net)—			
Grade B to H, basis 280 lbs.	bbl.	4.75	6.95
Grade K to N	bbl.	7.00	7.10
Grade WG to X	bbl.	7.55	8.35
Wood	bbl.	4.00	5.45
Rotten Stone, pwd. bbls.	lb.	.01¾	.02½
Silica	ton	20.00	27.00
Soap, Mottled	lb.	.04⅛	.04½
Olive Castile, bars	lb.	.27½	.30
Olive Castile, powder	lb.	.27	.38
Powdered White, Neutral	lb.	.20	.22
Olive Oil Foot, bars, 68-70%	lb.	.09	.09½
Green, U.S.P.	lb.	.11	.13½
Tallow Chips, 88%	lb.	.07⅝	.07⅞
Soda Ash, cont., wks., bags, bbls.	100 lb.	1.08	1.35
Car lots, in bulk	100 lb.	.90	.95
Soda Caustic, cont., wks., solid	100 lb.	—	2.30
Flake	100 lb.	—	2.70
Liquid, tanks, 47-49%	100 lb.	—	1.95
Soda Sal., bbls.	100 lb.	$1.10	$1.30
Sodium Chloride (Salt)	ton	15.00	15.60
Sodium Fluoride, bbls.	lb.	.07½	.08¾
Sodium Hydrosulfite, bbls.	lb.	.16	.17
Sodium Metasilicate, ground	100 lb.	3.15	3.40
Crystalline	100 lb.	2.90	4.20
Sodium Pyrophosphate	100 lb.	5.10	5.55
Sodium Silicate, 40 deg., drum	100 lb.	.80	1.20
Drums, 52 deg. wks.	100 lb.	1.40	1.80
Tar Acid Oils, 15-25%	gal.	.21	.28
Triethanolamine	lb.	.19	.20
Trisodium Phosphate, bags, bbls.	lb.	.02	.026
Zinc Oxide, lead free	lb.	.06½	.07¾

Oils — Fats — Greases

Babassu, tanks, futures	lb.	.06½	Nom.
Castor, No. 1, bbls.	lb.	.09½	.10½
No. 3, bbls.	lb.	.09¼	.10
Coconut (without excise tax)			
Manila, tanks, N. Y.	lb.	.03⅛	.03¼
Tanks, Pacific Coast, futures	lb.	.02¾	.02⅞
Copra, bulk, coast	lb.	.018	—
Corn, tanks, mills	lb.	.06	—
Cottonseed, crude, tanks, mill	lb.	.05¾	.05⅞
PSY, futures	lb.	.07	.07¼
Fatty Acids,			
Corn Oil, tanks	lb.	.08¼	.09
Coconut Oil, tanks	lb.	.08¼	.08⅝
Cotton Oil, tanks	lb.	.07¼	.07½
Settled soap stock	lb.	.03	.03⅛
Boiled soap stock, 65%	lb.	.04	.04⅛
Foots, 50%	lb.	.01⅜	.01½
Linseed Oil	lb.	.08	.09
Red Oil, bbls., dist. or sapon.	lb.	.07⅜	.08⅛
Tanks	lb.	.06½	.07½
Stearic Acid,			
Double pressed	lb.	.10½	.11½
Triple pressed	lb.	.13¼	.14¼
Greases, choice white bbls.	lb.	.05½	.05¾
Yellow	lb.	.04⅞	.05
Lard, city	lb.	.06¾	.07
Linseed, raw, bbls.	lb.	.0890	.0910
Tanks, raw	lb.	.0830	.0850
Boiled, 5 bbl. lots	lb.	.0970	.0990
Olive, denatured, bbls., N. Y.	gal.	.85	.86
Foots, bbls., N. Y.	lb.	.06⅞	.07
Palm, shipment	lb.	.0320	—
Palm Kernel, shipment	lb.	.0345	Nom.
Sesame Oil, dms.	lb.	.09	.09¼
Soya Bean, domestic tanks, crude	lb.	—	.05½
Stearine, oleo, bbls.	lb.	.06½	.06¾
Tallow, special, f.o.b. plant	lb.	.05¼	—
City, ex. loose, f.o.b. plant	lb.	.05⅜	—
Teaseed Oil, crude	lb.	.09	.09¼
Whale, refined	lb.	.0770	.0830

(As of March 27, 1939)

Essential Oils

Almond, Bitter, U.S.P.	lb.	$2.25	$2.30
Bitter, F. F. P. A.	lb.	2.40	2.45
Sweet, cans	lb.	.60	.62
Anise, cans, U.S.P.	lb.	.67	.70
Bay tins	lb.	1.20	1.25
Bergamot, coppers	lb.	3.65	3.85
Artificial	lb.	1.25	1.30
Birch Tar, rect. tins	lb.	.60	.65
Crude, tins	lb.	.15	.18
Bois de Rose, Brazilian	lb.	1.55	1.60
Cayenne	lb.	1.50	1.75
Cade, cans	lb.	.41	.44
Cajeput, native, tins	lb.	.48	.50
Calamus, tins	lb.	5.50	6.00
Camphor, Sassy, drums	lb.	.27	Nom.
White, drums	lb.	.27	Nom.
Cananga, native, tins	lb.	1.25	1.30
Rectified, tins	lb.	1.80	1.85
Caraway Seed	lb.	1.80	1.85
Cassia, Redistilled, U.S.P.	lb.	.93	.95
Cedar Leaf, tins	lb.	.60	.62
Cedar Wood, light, drums	lb.	.28	.30
Citronella, Java, drums	lb.	.27	.28
Citronella, Ceylon, drums	lb.	.34	.37
Clove, U.S.P., tins	lb.	.98	—
Eucalyptus, Austl., U.S.P., cans	lb.	.34	.35
Fennel, U.S.P., tins	lb.	1.05	1.10
Geranium, African, cans	lb.	2.70	3.50
Bourbon, tins	lb.	2.35	2.85
Turkish	lb.	2.00	2.25
Hemlock, tins	lb.	.60	.65
Lavender, U.S.P., cans	lb.	2.00	4.75
Spike, Spanish, cans	lb.	1.05	1.10
Lemon, Ital., U.S.P.	lb.	2.75	3.75
Cal.	lb.	2.50	—
Lemongrass, native, cans	lb.	.31½	.32
Linaloe, Mex., cases	lb.	1.25	1.30
Nutmeg, U.S.P., tins	lb.	1.12	1.15
Orange, Sweet, W. Ind., tins	lb.	1.75	1.85
Italian cop	lb.	2.25	3.25
Distilled	lb.	—	.50
California	lb.	—	.75
Origanum, cans, tech	lb.	.90	1.60
Patchouli	lb.	3.50	6.00
Pennyroyal, dom.	lb.	2.10	2.15
Imported	lb.	1.75	1.90
Peppermint, nat., cans	lb.	2.30	2.55
Redis., U.S.P., cans	lb.	2.55	2.80
Petitgrain, S. A., tins	lb.	.80	.85
Pine Needle, Siberian	lb.	.95	1.00
Rosemary, Spanish, tins	lb.	.56	.75
drums	lb.	.51	.70
Sandalwood, E. Ind., U.S.P.	lb.	4.75	4.80
Sassafras, U.S.P.	lb.	.90	1.00
Artificial, drums	lb.	.36	.37
Spearmint, U.S.P.	lb.	1.70	1.75
Thyme, red, U.S.P.	lb.	.85	1.25
White, U.S.P.	lb.	.85	1.45
Vetivert, Bourbon	lb.	3.50	15.00
Ylang Ylang, Bourbon	lb.	2.50	3.00

Aromatic Chemicals

Acetophenone, C. P.	lb.	$1.30	$1.45
Amyl Cinnamic Aldehyde	lb.	2.00	2.25
Anethol	lb.	1.00	1.05
Benzaldehyde, tech.	lb.	.60	.70
U. S. P.	lb.	.85	.95
Benzyl, Acetate	lb.	.44	.49
Alcohol	lb.	.63	.68
Citral	lb.	1.40	3.10
Citronellal	lb.	.75	.80
Citronellol	lb.	1.60	1.65
Citronellyl Acetate	lb.	4.50	7.00
Coumarin	lb.	2.75	4.65
Cymene, drums	gal.	.90	1.25
Diphenyl oxide	lb.	.50	.55
Eucalyptol, U.S.P.	lb.	.55	.57
Eugenol, U.S.P.	lb.	1.70	2.15
Geraniol, Domestic	lb.	.67	3.00
Imported	lb.	2.00	3.00
Geranyl Acetate	lb.	1.20	2.50
Heliotropin	lb.	1.80	2.20
Hydroxycitronellal	lb.	2.00	2.50
Indol, C. P.	oz.	2.00	2.13
Ionone	lb.	1.30	4.05
Iso-Eugenol	lb.	3.00	4.25
Linalool	lb.	2.10	6.30
Linalyl Acetate	lb.	1.35	2.25
Menthol	lb.	3.00	3.35
Methyl Acetophenone	lb.	2.50	3.00
Anthranilate	lb.	2.10	2.30
Paracresol	lb.	4.50	6.00
Salicylate, U.S.P.	lb.	.35	.37
Musk Ambrette	lb.	3.25	3.65
Ketone	lb.	3.40	3.80
Xylene	lb.	1.00	1.25
Phenylactaldehyde	lb.	2.25	3.50
Phenylacetic Acid	lb.	1.75	3.00
Phenylethyl Alcohol	lb.	2.50	3.35
Rhodinol	lb.	6.65	13.00
Safrol	lb.	.50	.53
Terpineol, C. P., 1000 lb. drs.	lb.	.23	.24
Cans	lb.	.25	.30
Terpinyl Acetate, 25 lb. cans	lb.	.77	1.00
Thymol, U.S.P.	lb.	1.40	1.45
Vanillin, U.S.P.	lb.	2.10	2.35
Yara Yara	lb.	1.25	1.50

Insecticide Materials

Insect Powder, bbls.	lb.	.30	.31
Concentrated Extract			
5 to 1	gal.	1.60	1.70
20 to 1	gal.	6.00	6.50
30 to 1	gal.	9.25	9.50
Derris, powder—4%	lb.	.18	.28
Derris, powder—5%	lb.	.24	.34
Cube, powder—4%	lb.	.20	.24
Cube, powder—5%	lb.	.24	.28

Gums

Arabic, Amb. Sts.	lb.	.09	.09¼
White, powdered	lb.	.12½	.14
Karaya, powdered No. 1	lb.	.14	.23
Tragacanth, Aleppo, No. 1	lb.	2.25	2.35
Flake	lb.	.50	1.00

Waxes

Bees, white	lb.	.37	.39
African, bgs.	lb.	.19	.20
Refined, yel.	lb.	.25½	.26
Candelilla, bgs.	lb.	.15½	.16
Carnauba, No. 1	lb.	.37½	.39
No. 2, N. C.	lb.	.34	.34½
No. 3, chalky	lb.	.28	.30
Ceresin, yellow	lb.	.08½	.11½
Paraffin ref. 125-130	lb.	.039	.040

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Production Section

A section of SOAP devoted to the technology of oils, fats, and soaps published prior to Jan. 1, 1932, as a separate magazine under the title, *Oil & Fat Industries.*

TOILET SOAP BOILING

IN reviewing the practical side of toilet soap manufacture, it is pointed out that beef tallow and coconut oil remain the foundation for the best toilet soaps. The tallow must be of good color, have a low free fatty-acid content, and a titre around 43½° C. Solvent-extracted tallow is not suitable because of the danger of darkening when converted into soap. Tallow should be steam-rendered. All tallows should be tested by making a sample soap with alcoholic caustic soda. It is quite possible that a tallow which is snow-white may have been bleached. If the soap formed is yellowish, this shows that the tallow was over-bleached. This may not happen often but it has been known to occur.

Bleached palm oil is often included in some kettle charges. It does not make as white a soap as beef tallow, but is useful for colored soaps. The coconut oil must be of satisfactory whiteness and have a free acidity of not more than 4 or 5. The use of 1 per cent of resin is justified for many reasons, the outstanding one being that it acts as a fixative for the perfume. A second advantage is that at the point where it is introduced it helps lower the percentage of carbonate in commercial caustic soda. Resin also helps to reduce the amount of mineral salts in the finished soap and so plays a part in preventing cracking.

A general charge is 75-80 per cent of beef tallow, 20-25 per cent of coconut oil, and 1 per cent of W. W. rosin. This charge takes a little longer than that of the average household soap. For purposes of illustration, a charge of 16 tons of tallow and 4 tons of coconut oil will be assumed, with the addition of 1 per cent of rosin. In the first stage 10 tons of tallow are melted and pumped into the pan and at the same time caustic soda of 33.5° Be. is run in. The mass is kept at the boil during this period. Should it become heavy at any time, brine solution is run in, keeping the soapy mass slightly open and allowing the steam to come through.

Just before the whole of the 10 tons of tallow is pumped into the kettle, the flow of caustic is stopped. The soap maker tests the boiling mass by taste and with phenolphthalein indicator solution. These two tests are constantly applied, as small amounts of caustic are added, until there is a slight excess of caustic. Boiling is continued throughout this period and for another hour or so. Salting out is effected by the addition of a saturated solution of brine.

When the soap is just open, a spadeful is taken out and tilted up. A few drops of liquor should leave the soap. The soap maker tastes this liquor, which should indicate the same degree of excess caustic as in the previous test, and at the same time confirm the condition of the kettle. If the test is satisfactory, the steam is shut off and the contents of the kettle allowed to settle overnight. The next morning, the glycerine liquor is pumped to storage. The remaining six tons of tallow are pumped on top of the soap and saponification carried out as in the first day's boil, followed by salting out at the end of the day. Just before the end of that day's boil, the resin is put into the pan.

The most important operation begins after the liquor from the second day's boil has been drawn off. This is the saponification of the coconut oil, leading up to the strong change. The coconut oil is pumped in and treated with caustic soda. Boiling is continued until there is a slight excess of caustic soda taste. Successive amounts of caustic soda are added, while the mass is kept boiling, until the soap is slightly "cut." Boiling in this condition for 3-4 hours ensures that no unsaponified fat can remain in the kettle. This is allowed to settle overnight, but owing to the fact that the liquor contains considerable free caustic soda, it is pumped into a separate tank and is best used up in the later preparation of household soap.

It is advisable to boil the contents of the kettle again and close the soap again, either by condensed steam or by the addition of a small amount of water. A little caustic is

again added to the boiling mass until it is again slightly open. This boil needs only about a couple of hours.

After a third overnight standing and drawing off the liquor, the process of fitting begins. Steam is used to close the mass. The soap begins to swell and as it does so, it forms huge flakes with edges that seem to roll inwards. From time to time the soap maker takes a little of the soap on a hand trowel and notes how it leaves the blade. In its best condition it parts from the blade slowly, leaving no moisture behind. When properly finished the contents of the kettle are covered and allowed to stand for a few days.

A sample of the soap is tested for free caustic soda, carbonate, salt, and free fatty acids. If the boil has been well carried out the total mineral salts should be well below 1 per cent.

The pure soap curd is run into the flaking machines, where it is cooled, shredded and dried. Soap leaving the kettle with a fatty acid content of 64 per cent will leave the machine in the form of thin flakes with a fatty acid content of about 76-77 per cent. This is a good percentage high-class soap flakes or for milling into toilet soap. The temperature maintained in the drying chamber is extremely important, as too high a temperature will tend to reduce the flakes to powder, resulting in gritty particles which will show in the finished soap cake. A temperature of 125° F. was found to give the best results. *Manufacturing Perfumer* **4,** 39-42 (1939).

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Mineral Wetting Agent

Capillary-active products are obtained by treating the high boiling distillation products of mineral oils, lignite tars or other bituminous substances with sulfonating agents and nonsulfonating water-absorbing agents at temperatures up to 35° C. E. g., middle colored mineral oil of viscosity 7.5 Engler at 20° C. is treated with chlorosulfonic acid and phosphorus pentoxide at 30° to give a wetting agent. Oranienburger chem. Fabrik A.-G. German Patent No. 665.825.

Pure Neutral Fats

Possibly the soap manufacturer is at a loss to explain why he gets only 90-92 per cent of saponifiable and useful material from so-called pure neutral fat. He first calculates that the glycerine content amounts to 4-6 per cent, depending on the molecular weight of the fatty acids present. Some of the common molecular weights are:

Fatty Acids	*Mol. Wt.*
Rapeseed oil	338
Palm oil	256
Coconut, babassu, palm-kernel	200
Other fatty acids	282

The lower the molecular weight of the fatty acids, the greater the content of glycerine on a percentage basis. From 1 to 2 per cent of lower fatty acids are usually present in a refined "neutral" fat, which have been formed by the oxidation of unsaturated fatty acids. These lower acid soaps are not salted out but go into the under-liquor and are lost, as far as the curd soap is concerned. The amount of unsaponifiable matter present in the form of sterols is apt to be about 1 per cent. A small amount of protein-like material, perhaps phosphatides is also carried along in the purified fat. By adding these ingredients together, it can be seen why the amount of useful saponifiable material is only 90-92 per cent. R. Dieterle. *Seifensieder-Ztg.* **66,** 15-16 (1939).

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Soap Interface Study

Interfacial tensions against benzene of aqueous solutions of sodium and potassium soaps of a homologous series were measured and the results compared with corresponding surface-tension measurements by other workers. The various units in the soap-solution equilibria appear to possess surface activity to a smaller or greater extent. Simple molecules appear to be more surface-active than the simple ions of the soaps of the lower series because of the higher osmotic activity of the latter, and more surface-active than the aggregated particles of the higher series of fatty acids, because of less sensitivity to surface forces on the part of the latter. As simple molecules are entirely dissociated, it would appear that the surface activity is mainly dependent upon the nature of the anions. As the latter become concentrated at the surface, the cations form a double layer with oriented anions. The difference between the surface activity of sodium, potassium and even ammonium and lithium soaps observed by different workers thus appears to be due to the fact that the entire soap molecule gets concentrated at the interface. B. S. Kulkarni and S. K. K. Jatkar. *J. Indian Inst. Sci.* **21A,** Part 34, 395-405; through Chem. Abs.

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Cyclohexanol Soaps

Cyclohexanol and methyl cyclohexanol can easily be crutched into soft or hard soaps to form pasty masses of varying consistency. These soaps give clear solutions with water and possess great detergent and solvent powers. They have been used by garage employees and have been stated to be far more effective than the usual mechanics' hand soap containing abrasives. The soaps are used by drycleaners for spotting, owing to the excellent solvent action of the cyclohexanols on paint, tar, waxes and similar stains difficult to remove. The soap dissolves in petroleum solvents and in trichloroethylene. Another application is the use of these soaps for cleaning rubber floors and protective clothing made of rubber treated fabrics, such as raincoats.

Potash soap containing 15 per cent of hexanol solvents is an excellent and economical material for cleaning paint work. Its effect on paint varies with the type of paint, but it is particularly recommended for all lead compositions. Paul I. Smith. *Am. Perfumer* **38,** 37-9 (1939).

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Soap Beads

A method of producing soap beads is to drop a normally solid or gelled soapy substance in a molten condition into a bath or nonaqueous cooling liquid to effect rapid cooling and hardening of the drops into the form of beads. Vaman R. Kokatnur. Canadian Patent No. 379,951.

Corrosion in the Soap Plant

Many experiments and corrosion tests have been made in operating plant equipment associated with the production of soaps, fatty acids, and by-products from these processes. In the processing of fatty acids, Monel and Inconel metals showed a high degree of usefulness. Monel was applied successfully in the form of heating coils in the Twitchell process. More recently there has been increased interest in the use of Inconel for such equipment in cases where complete elimination of possible sources of copper has been desired. The superiority of Ni-Resist, which is a highly alloyed cast iron, over plain cast iron was notable. Inconel is superior to nickel for autoclaves operating at the higher temperatures and pressures associated with modern autoclave splitting practice, where over 400° F. may be used.

Monel metal is being used satisfactorily for bubble caps in a fatty-acid distilling column, and for piping in a fatty-acid distillation and purification system. Monel bubble caps and piping which have replaced copper have shown marked superiority over the latter metal, particularly where velocities are high, and at pipe bends. Used in fatty-acid distillation equipment, Ni-Resist has a corrosion resistance varying from 15 to 50 times that of plain cast iron.

Experiments in soap-making plants show that nickel is highly resistant to corrosion by sodium hydroxide and is the preferred material for the handling of caustic. Nickel-clad steel tanks are used for storing caustic. Ni-Resist is used for equipment such as pumps and other heavy castings in contact with caustic. Such equipment as soap-boiling kettles are made from nickel-clad steel, with coils or steam jets of nickel or Monel metal. Since corrosion in soap kettles seems to be most acute at and above the liquid line, the upper portions of existing steel or iron kettles have been lined with corrosion-resisting materials such as Monel, nickel, or stainless steel. Crutchers, frames, cutters, mixers, plodders, dies, pipe lines, wrapping tables, and much other equipment have been installed of Monel, nickel, nickel-clad steel and similar metals.

In the acid and caustic treatment of spent lye, and in a glycerine-salt evaporator, nickel, Inconel, Monel and Ni-Resist metals were found highly resistant to corrosion. Nickel is being used for piping and for evaporator tubes, and nickel-clad steel for treating tanks and evaporator bodies. Ni-Resist, of both a regular and copper-free variety, is being used for filter-press plates and cast doors of the salt recovery boxes on evaporators. Nickel-clad steel is used for concentrated brine-storage tanks, and pure nickel tubing for brine piping system. G. L. Cox. *Ind. Eng. Chemistry* **30,** 1349-55 (1938).

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Review of Hydrogenation

For the soap manufacturer, hydrogenation makes available a large supply of raw material with which to supplement the rather limited amount of natural hard fats, and provides soap stocks that are superior to many natural fats. A study of the hydrogenation reaction leads to the conclusion that it is neither linear nor monomolecular, but is probably the resultant of a series of monomolecular reactions.

Increase in temperature, pressure, concentration of catalyst, and agitation increases the rate of reaction, but with varying effects. Temperature has only a very slight influence in the usual region of hydrogenation, 100-200° C. Pressure affects it in proportion to its square root, or as the atomic concentration of hydrogen present. The evidence is admittedly slender. Rate change with concentration of catalyst leads to the opinion that an oil-catalyst complex is formed in equilibrium with the oil and catalyst, and it is this complex which alone further reacts with the atomic hydrogen. Stirring, within certain limits, has a linear effect on the rate.

Temperature has a large effect on selectivity, unlike its effect on rate. Hydrogenation is an exothermic reaction and the effect of increased heat, within certain limits, is to prevent the normal increase in rate, and at the same time cause those reactions to take place which are endothermic, namely, the formation of higher melting iso-acids. There is evidence to indicate that, where temperature alone is involved, an almost equilibrium arrangement takes place between the proportion of iso- and saturated acids formed. Increasing the amount of catalyst gives only a small increase in selection, while increased hydrogen flow or increased concentration has a considerable, though nonselective effect. The article covers 55 references to the literature. J. W. McCutcheon. *Canadian Chem. and Process Industries* **23,** 53-7 (1939).

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Soap Wasting Rate

An apparatus is described for measuring the rate at which soap is washed away in contact with water. A cylindrical piece of soap is stamped out, weighed and placed in the apparatus with a measured amount of water. The water is stirred mechanically for 5 minutes at a definite rate. A sample of the aqueous soap solution is then drawn off and its fat content determined. In this way the rate at which the soap is used up can be calculated, the fat content of the original soap sample being known. By this method soap made from synthetic fats was compared with soap made from natural fats, with results as follows:

	Wt.	*Per cent Loss*
Synthetic soap		
Sample 1	9.30 g.	17.35
Sample 2	9.15 g.	19.45
Natural soap		
Sample 1	9.26 g.	15.68
Sample 2	9.00 g.	17.71

The difference between the two types of soap is small, other conditions being constant. H. Fiedler. *Fette und Seifen* **46,** 34-5 (1939).

Products and Processes

Liquid Soap

A liquid soap may be made by the cold method from 55 parts of coconut or palm-kernel oil, 5 parts of castor oil, 31 parts of 50° caustic potash, and 10 parts of water. The soap paste is tested and corrected if necessary, so that it will be only slightly alkaline, then is dissolved in the necessary amount of soft water to give the desired fatty acid content to the finished product. If fatty acids are used, the soap must be prepared by the half-boiled process and the hot fatty acids stirred into the lye heated to 80-90° C., when about 5 per cent more lye is needed. A small excess of alkali is necessary for complete saponification and for obtaining a clear soap solution. *Seifensieder-Ztg.* **66,** 42 (1939).

Alkyl Sulfate Shave Cream

A shaving cream may be made from the sodium salt of alkyl sulfates as follows:

	Parts
Sodium lauryl sulfate	45.90
Water	36.22
95% glycerine	15.75
Stearic acid	2.37
Perfume	0.78

A 20 per cent solution of sodium lauryl sulfate, suitably perfumed, serves either as a liquid shampoo or as liquid soap. H. Fiedler. *Fette und Seifen* **46,** 35-6 (1939).

Alcohol Sulfates

An attempt was made to prepare plastic masses of fatty alcohol sulfates which would be moldable, possess cosmetic properties, and retain the wetting, washing, emulsifying, foaming and dispersion character of soaps. The moldable base was made from stearyl and cetyl alcohols, which did not diminish the emulsifying power of the corresponding sulfate. The myricyl alcohol sulfate was more brittle and foamed less than the stearyl or cetyl derivatives. The wetting and washing character was achieved by a mixture of those sulfates of higher alcohols with 16-18 carbon atoms and with a melting point in the range of 50-59° C.

In making emulsions suitable for shampoo purposes, methylcellulose was used. This acted similarly to stearyl and cetyl alcohols and did not remove the natural fat in the hair. The detergents containing sulfates or methylcellulose remained neutral in aqueous solution, produced an abundant lather, were not irritating and left the skin soft. Anselm Bohanes. *Chem. Obzor* **13,** 70-3; through Chem. Abs.

Silicate Detergent

A product containing an alkali silicate which may be used as a detergent is prepared by mixing together an alkali subsilicate having a relatively high molecular ratio between the alkali oxide and silica, and a chemical compound capable of reacting with the oxide of this silicate, e. g., an alkali borate, carbonate, phosphate or soap soluble in water. Pennsylvania Salt Manufacturing Co. French Patent No. 830,533.

Sea-weed Soap

Ordinary soap, when in a softened or melted condition, has added to it the mucilaginous matter which can be extracted from seaweed, and more especially from seaweed pods. The mixture is allowed to harden subsequently by cooling. Such a soap is claimed to possess improved cleansing properties and antiseptic action. It is useful for laundry or toilet purposes. Herbert A. Couchman. British Patent No. 498,692.

Ti-tree Oil Soaps

Soap made with ti-tree oil, well known as a germicide, is excellent because comparatively high proportions of the antiseptic oil may be used without any fear of skin irritation. The oil is introduced into the crutching machine and presents no difficulty to the soap manufacturer. The usual proportion of ti-tree oil in soaps is about 4 per cent. With an oil having a Rideal Walker coefficient of 12, this soap should have a germicidal value 16 times greater than that of the usual 3 per cent carbolic soap. A liquid shampoo containing 3 per cent ti-tree oil was tried as a treatment for dandruff with excellent results. The following formula produces a clear, nonirritant shampoo with good lathering properties:

	Per cent
Oleic acid	7
Ti-tree oil	3
Coconut oil fatty acids	12
Triethanolamine	10
Glycerine	2
Water	66

Soapless shampoos may be perfumed with the oil which also makes them antiseptic. Robert E. Goldsbrough. *Manufacturing Perfumer* **4,** 45 (1939).

Soapless Detergent Tablet

A soap-free detergent in tablet form contains predominantly a mixture of more than five per cent of glycerine or glycol partially esterified with a saturated fatty acid containing 12 or more carbon atoms, and less than 95 per cent of a solid water-soluble salt such as the sodium salt of a sulfuric-acid reaction product of an aliphatic organic compound. This reaction product is characterized by its ability to dissolve in water quickly to an amount ample to accomplish its purpose as a detergent in cleansing operations, by its ability to resist precipitation when added to hard water in concentrations ordinarily employed in cleansing operations, and by detergent and lathering properties of sufficient magnitude that efficient cleansing is effected when it is employed in the ordinary way. Specified sulfuric acid reaction products are sulfonated and sulfated aliphatic hydrocarbons or alcohols. An example contains 90 parts of the sodium salt of the reaction product of concentrated sulfuric acid with coconut-oil alcohols, and 10 parts of the mono- and (or) diglycerides prepared from hydrogenated cottonseed oil. Procter & Gamble Co. British Patent No. 488,196.

Hard-water Soaps

Soaps which may be used in hard water are obtained by mixing the sodium soaps of fatty acids having two or more ethylenic groups, with a proportion of alkali orthophosphate. The phosphate salt should be one-tenth to one-quarter of the fatty acids, calculated on an anhydrous basis. The soaps are produced in the form of flakes, threads, parings, puffed granules, powder or similar form to ensure rapid solution. Specific soaps are those prepared from linoleic acid with or without oleic acid, peanut oil with or without coconut oil, sunflower oil, olive oil, kapok oil, soybean oil, rape oil, commercial oleins, and slightly hardened peanut or sunflower oil. Suitable phosphates are di- or trisodium or potassium phosphates or mixtures of these. The fat mixture may contain up to 20 per cent of stearic or palmitic acids, or up to 35 per cent of myristic or lauric acids.

An example is a soap powder prepared from 7.5 pounds of trisodium phosphate, $Na_3PO_4.12H_2O$, 7.5 pounds of disodium phosphate, $Na_2HPO_4.12H_2O$, 12.5 pounds of sodium perborate, 12.5 pounds of neutral sodium silicate, and 60 pounds of a sodium soap of 85 per cent fatty-acid content, obtained by saponifying the fatty acids from a 3:1 mixture of peanut oil and coconut oil. Lever Brothers & Unilever Ltd. British Patent No. 492,719.

Crude Glycerine Analysis

The dichromate method of Hehner and Steinfels is considered superior to the acetin method of Benedikt and Cantor, adopted by the I. S. M. of London. Advantages of the dichromate method are quickness and accuracy, but it is susceptible to several improvements including: Dilution of the glycerine and its preliminary treatment for a determination of the total residue at 160°C.; suppression of the unnecessary addition of 0.15 cc. of water to determine the volume of the precipitate with lead acetate; suppression of the conventional addition of sulfuric acid to take care of the excess lead salts; substitution of dichromate solution for solid potassium dichromate; and substitution of a Normal/13 or Normal/14 thiosulfate solution for 0.1 Normal. G. Martinenghi. *Olii minerali, grassi e saponi, colori e vernici* **18,** 21-5 (1938); through Chem. Abs.

Bluing and Water Softener

In British Patent No. 488,647, A. A. Fowler and R. M. Otis describe a washing composition which serves the double function of bluing white clothes and softening the water. The material consists of crystals of a compound such as borax or trisodium phosphate carrying a blue water-soluble dye on their exterior. *Perfumery & Essential Oil Record* **29,** 325-6 (1938).

Sulfate Detergent

The lathering and detergent properties of a detergent containing as the essential ingredient sodium lauryl sulfate or a similar product, and an unsulfated alcohol, are improved by adjusting the unsulfated-alcohol content so that the ratio is not more than 75 parts of unsulfated alcohol to 100 of the neutralized alkyl sulfate. The alcohol, if added, may be that obtained from coconut or palm-kernel oil, or an alcohol prepared from oxidized petroleum. Procter & Gamble Co. British Patent No. 489,097.

Colloidal Fat Solution

A product that is colloidally soluble in water is obtained by bringing wool fat, or purified fractions thereof, into contact with an alkali metal at an elevated temperature or in the presence of an organic solvent that is indifferent toward the alkali metal. The metal that remains undissolved is filtered off or removed and the solvent, if used, evaporated. The product, of soft wax-like consistency, forms a cream-like emulsion on trituration with a small quantity of water, which on further dilution yields a weakly alkaline colloidal solution. I. G. Farbenindustrie A.-G. British Patent No. 483,315.

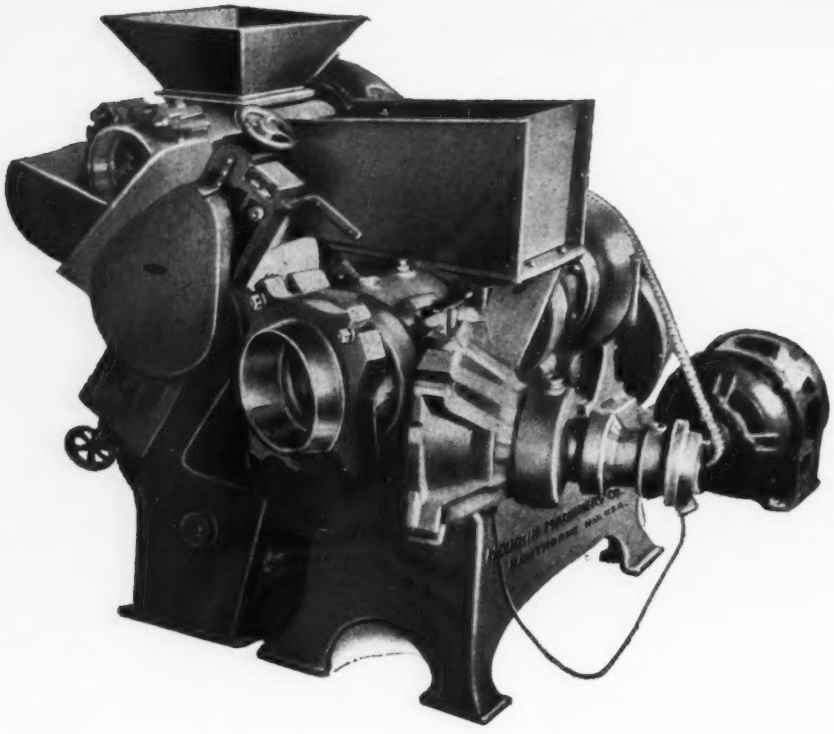
Titanium Whites in Soaps

Use of small quantities of titanium white in soap flakes and white toilet soap offers advantages over other whites. Although high-content titanium pigments are more expensive than the mixed whites containing large quantities of barytes, lithopone, barium carbonate etc., they are economical in practice as their covering power is unexcelled. Titanium pigments have an emollient effect on lather, disperse uniformly during washing, and do not cling to textiles or skin.

A grade of titanium white containing 98-100 per cent of titanium dioxide is preferable to mixed titanium-barium pigments which may contain as little as 25 per cent of titanium dioxide. The higher the percentage of titanium dioxide present, the higher refractive index and also the higher the tinting strength and hiding power. Barium sulfate (barytes) has a refractive index of 1.64 and titanium dioxide 2.76; zinc oxide has a refractive index of 2.02. The tinting strength of titanium dioxide is 1150, while that of zinc oxide is only 200. The average particle size of the titanium pigment is 1/1000 mm., which is very much smaller than that of zinc or any other commercial white. In addition to its tinting strength, a pigment such as titanium white gives body to naturally soft soaps and prevents excessive transparency. The best grades of titanium can be obtained in a neutral condition and can be relied on to cause no complications in processing. Paul I. Smith. *Am. Perfumer* **37,** No. 6, 46, 72 (1938).

Refining Palm Oil

An edible grade of palm oil is prepared by heating the oil to 200-350° C. in the absence of an atmosphere containing oxygen so as to decompose the dyestuffs of the oil. The decomposed dyestuffs are removed by an adsorbent substance, and the treated oil is hydrogenated to eliminate the effect of the decomposed dyestuffs. Francis M. Sullivan. French Patent No. 828,725.



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553—New Hysan Applicator

Hysan Products Co., Chicago, is in production on a new automatic wax applicator. The new applicator

is said to apply wax more evenly, thus giving greater coverage. It is of sturdy construction.

554—New Ferguson Machine

J. L. Ferguson Co., Joliet, Ill., packaging machinery manufacturers, have recently introduced a new type machine known as the Packomatic Commander. The Commander takes knocked-down containers, whether solid fibre, single or double corrugated and automatically sets them up in position for packers. Literature will be sent upon request.

556—New Patterson Agitator

Patterson Foundry and Machine Co., East Liverpool, Ohio, is now offering a new model of its Unipower Agitator. The company states that in addition to retaining all of its original advantages, the new unit permits the use of an independent oil reservoir, and in conjunction with a positive plunger pump made it possible to change from lubrication by immersion to lubrication by positive oil spray. The patented guide bearing is enclosed in a heavy housing of its own, which permitted the change of the bearing itself from an oilless type bronze to a heavy duty type ball bearing, with greatly increased thrust capacity. Literature is available.

557—Fumeral Folder

Fumeral Co., Racine, Wis., has issued a folder carrying a description of its "Fumeral" instant diffusers. These include the one quart capacity, Model A and the two quart capacity, Model B.

558—Richards Catalogues

Richards Chemical Works, Jersey City, have recently issued two catalogues, one describes their products for dry cleaning, their make-up and uses. The other contains a description of their products for the beauty and barber supply industry which include soaps, shaving creams, hair tonic, etc.

559—D. & O. Price List

Dodge & Olcott Co., New York, has issued a wholesale price list of essential oils, perfume bases, aromatic chemicals, balsams, gums, and oleo resins. The booklet gives buyers a ready reference. Copies are available.

560—Chemists Directory

The Association of Consulting Chemists and Chemical Engineers has recently issued a fifth edition of the Directory of Association Members. The directory, in addition to listing the names of the association's members, describes the services they are prepared to render and their qualifications. A geographical classification is listed as is a subject index. This booklet may be obtained gratis on applying to the office of the Association, 50 East 41st Street, New York.

561—Patent Booklet

Lancaster, Allwine & Rommel, patent attorneys, Washington, D. C., have recently published a booklet "General Information Concerning Inventions and Patents." As an insert it contains a schedule of government and attorney's fees in patent cases relating to inventions. The subject of registration of trade-marks and copyrights is also briefly treated in the booklet which is mailed on request.

Sprout-Waldron Make Changes

Sprout, Waldron & Co., Muncy, Pa., have recently made changes in their New York state representation. H. K. Worthington, district sales engineer, now represents the company in both eastern and western New York, taking over the duties of C. L. BeVier, who is no longer with the company. The metropolitan district is taken care of by D. E. Smyth, who is in charge of the New York office.

Hercules Elects Higgins

Charles A. Higgins was elected president of Hercules Powder Co., Wilmington, at a recent meeting of the board of directors. He has been with the company since 1915 and has been vice-chairman of the executive committee since 1933. He succeeds R. H. Dunham, who continues with the company as chairman of the board of directors, the position he has held jointly with the presidency since the organization of the company in 1912. At the annual stockholders meeting, the entire board of directors was re-elected.

Paramount Sales Move

Paramount Sales Corp., laundry soaps, has recently moved its office and warehouse to larger quarters at 968 Intervale Avenue, Bronx, N. Y.

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No. 2,144,884, Brushless Shaving Cream, Patented January 24, 1939, by Wolf Kritchevsky, Chicago, Ill., assignor to Rit Products Corporation, Chicago, Ill. A brushless shaving cream comprising a plastic emulsion of oleaginous material and aqueous material and having included therein a proportion of a chemical compound having oleophillic and hydrophillic groups in the molecule, the oleophillic group comprising a hydrocarbon group containing at least eight carbon atoms, the chemical compound having good wetting and lubricating properties and being miscible with water and having the properties of penetrating through the natural greasy layer on the skin and facilitating the softening of the hair when applied to the skin.

No. 2,145,015, Dry Disinfecting Composition, Patented January 24, 1939, by Max Y. Seaton, Greenwich, Conn., assignor, by mesne assignments, to Westvaco Chlorine Products Corporation, New York, N. Y. A new composition of matter in the form of a dry powder stable on storage and having detergent and disinfecting properties, the powder comprising essentially crystallized sodium carbonate, crystallized disodium phosphate and sodium hypochlorite.

No. 2,145,214, Parasiticide, Patented January 24, 1939, by David Walker Jayne, Jr., Elizabeth, N. J., assignor to American Cyanamid Company, New York, N. Y. A mothproofing composition containing a phenolic salt of a disubstituted guanidine.

No. 2,146,661, Process for Soap, Patented February 7, 1939, by Benjamin H. Thurman, Bronxville, N. Y., assignor to Refining, Inc., Reno, Nev. A process of making soap, which process includes the steps of: passing a mixture of reagent and fat containing undesirable impurities through a heating zone in which a substantial proportion of the fat is saponified to form reaction products including soap, glycerine and other undesirable impurities; removing the glycerine and the other impurities from a mass of the reaction products to form a purified soap containing considerable moisture; pumping a stream of the purified soap through a second heating zone under pressure; introducing this heated stream of purified soap into a separating chamber in which the pressure is below the pressure existing in at least a portion of the second heating zone; controlling the amount of heat added during passage through the second heating zone so that at the pressure existing in the separating chamber at least a portion of the moisture in the stream of purified soap is in the form of vapor; and separately removing the vapor and the soap from the separating chamber.

No. 2,146,770, Manufacture of Soap, Patented February 14, 1939, by Julius A. Schwantes, Maplewood, N. J., assignor to Colgate-Palmolive-Peet Company, Jersey City, N. J. The improvement in the manufacture of soap which comprises forcing milled soap through a foraminous plate into an evacuated chamber to remove air and other gases, and plodding the soap, while maintaining it under the vacuum, to produce soap free from striations.

No. 2,147,947, Insecticide, Patented February 21, 1939, by Valdemar A. Johnson, Trenton, N. J.; dedicated to the free use of the People in the territory of the United States. The method for destroying the growth of living organisms, which comprises subjecting the organisms to the action of a gas, comprising hydrocyanic acid and methyl bromide in the proportion of 1 ounce of hydrocyanic acid and one-half pound of methyl bromide per 1,000 cubic feet of space.

No. 2,148,285, Shaving Cream, Patented February 21, 1939, by Stamford White, Greenwich, Conn. A jelly-like cream formed by mixing stearic acid 50 parts, triethanolamine 3 parts, lanolin 9 parts, water 160 to 212 parts, tragacanth gum 2.5 parts to 3.75 parts boracic acid 1 part.

No. 2,148,286, Shaving Cream, Patented February 21, 1939 by Stamford White, Greenwich, Conn. A shaving cream comprising a homogeneous mixture of 50 parts stearic acid, 7 parts lanolin, 6 parts mineral oil, 2 parts triethanolamine, 2 parts borax, water from 240 parts to a quantity sufficient to impart fluidity to the mixture, 2/3 to 4 parts gum of the class consisting of tragacanth and tragasol, 1 part boric acid, 1½ to 7 parts glycerine.

Metal Cleaner

A composition for cleaning metal and other articles contains 3000 parts of soda ash, 400 of saponified olein, 10,000 of water and 3 of methylene blue. Andre Croizat. French Patent No. 829,354.

Degreasing Liquid

A stable degreasing liquid is obtained by saponifying tall oil with excess of alkali solution, adding a grease solvent and then mixing in a phenol in a quantity sufficient at least to neutralize the excess of alkali. The tall oil may be replaced by an artificial mixture of 50-70 pounds of rosin acid with 40-20 pounds of fatty acid such as oleic acid or the liquid fatty acids derived from fish, corn or castor oils. Bennett (Hyde) Ltd. British Patent No. 491,960.

Soap Separation

In making soap, after saponification a stream of the saponified mixture containing soap and glycerine is continuously released into a chamber maintained under a vacuum. The molten soap is withdrawn from the chamber, cooled while in a substantially anhydrous condition and preferably out of contact with air, to form a friable mass capable of adsorbing moisture. Refining, Inc. British Patent No. 491,315.

Chlorine Soap Bleaching

Potassium soaps made from crude glycerides or fatty acids are decolorized and deodorized by treatment with alkali hypochlorite. In practice the hypochlorite is made on the spot by passing chlorine into the potash soap. Solvay & Cie. French Patent No. 829,156.

Theory of Saponification

Saponification has long been described as a reaction taking place in a heterogeneous mixture at the interface separating oil and aqueous phases. It has been held essential in most of the experimental studies to stir the reaction mixture vigorously but under controlled conditions, in order to promote emulsification and thus maintain a large interface. In some cases it has been recorded with obvious surprise that some of the saponifications went just as rapidly if stirring was discontinued after the initial mixing.

In experiments conducted on cold saponification it was found that even though there was no stirring after the first mixing, saponification started slowly but accelerated markedly after a period of induction, as though by autocatalytic action. In several experiments with coconut oil the velocity of reaction increased more than two hundred-fold from the initial to the greatest rate. The theory of heterogeneous reaction calls for a corresponding increase in the interfacial area. It is inconceivable that this could happen spontaneously. The true explanation appears to be that during the rapid stage of the reaction the saponification actually takes places in solution,—that the reaction is homogeneous in nature. Since the oil phase and the aqueous alkali phase are excluded from consideration as possible reaction media, the salted-out soap is the only phase which could fulfill this function. There is ample evidence that this is the case, as the same velocity effects were observed on saponifying three different oils with both caustic soda and potash, leaving the saponification mixtures at rest.

A study of phase equilibria and of reaction velocities in the soap-boiling process indicates that a more logical interpretation can be made on the theory of homogeneous reaction in the soap phase than by the emulsification theory. All of this is more of theoretical than practical interest, as the soap boiler does the right things for the right reasons without this information. However, research workers have aided in understanding the processes involved, although not all of the problems have been settled, such as the powerful accelerating effects of *alpha*- and *beta*-naphthol in cold saponification, for which there is as yet no explanation. E. Lester Smith. *Chemistry & Industry* **58,** 87-94 (1939).

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Alkali Analysis

In mixtures of alkaline salts with free alkali, such as are sold as paint removers, cooking-pan cleaners, drain-clearing materials, etc., it is often important to determine the amount of free caustic present. This cannot be done by titration with standard acid to a phenolphthalein end point, as any silicate present would react completely, one-half the sodium carbonate would react, and one-third the sodium phosphate.

To determine free alkali in mixed alkaline materials, dissolve a known weight of sample in water and titrate a measured volume with standard acid to a phenolphthalein end point. Titrate the same volume of sample solution with the same standard acid to a methyl orange end point. By taking the difference between these two readings, the amount of acid is obtained used by half of the carbonate and one-third of the phosphate. By deducting this from the phenolphthalein reading, the amount of acid is obtained used by the whole of the caustic soda and the silicate. It is only necessary to make a simple determination of silica in the original material calculate this to sodium silicate, and subtract this from the value found for sodium silicate plus caustic soda. P. D. Liddiard. *Chemistry & Industry* **58,** 111-12 (1939).

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Tea-seed Oil

Chinese tea-seeds contained 6.3 per cent of solid fatty acids which were found to be a mixture of stearic and palmitic acids. The liquid fraction contained about 90 per cent of oleic and 10 per cent of linoleic acid. Sei-iti Ueno and Takeo Ueda. J. Soc. Chem. Ind., Japan **41,** Suppl. binding 326-7.

Detergent Specifications

The technical committee on detergents, National Bureau of Standards, has recently issued a tentative draft of a proposed Federal specification for special detergents for aluminumware, dishwashing machines and manual cleaning. The detergents would be of two types: Type I—detergent for use in mechanical dishwashing machines and Type II—detergent for manual cleaning, under which, there are Class A—non-abrasive cleaner and Class B—abrasive cleaner. The following are a part of the requirements.

Type I—shall be of a material substantially uniform throughout. Large variations in color or particle size, which are indicative of non-uniformity, shall be cause for rejection. It shall be free from objectionable odor and shall dissolve rapidly in tepid water. The cleaner may be supplied in either powder, granule, chip or liquid form.

Type II—Class A, shall be suitable for any type of manual washing where abrasiveness is not desired. Other than that the material comes under the definition of the material for Type I.

Type II—Class B, shall be suitable for any uses requiring a manual cleaner where solid soil adheres too tenaciously for non-abrasive cleaners. It may be supplied in the form of a liquid, solid, paste or a combination of any two. Combinations of metal wools and soaps may be supplied. The cleaner shall be free from objectionable odor and from poisonous or irritant chemicals.

Specifications are given to which the material must conform after certain specified tests are run on it. Type I has specifications for turbidity, soap, corrosion, water-softening capacity, hydrogen ion content and buffer index, cleaning ability and relative cost. Type II—Class A, has similar specifications as Type I with the exception of the soap specification which is omitted. Type II—Class B, has specifications under which it must conform to detail requirements such as abrasion, corrosion, rinsibility and cleaning ability.

Acid-stable Detergent

An acid-stable wetting agent is used in conjunction with acid fluoride solutions in laundry sours. Mixtures of sodium isopropylnaphthalene sulfonate and sodium bifluoride are proposed for the purpose. Alkyl naphthalene sulfonates are also suggested in connection with the washing of glass windows with mildly acid fluoride solutions, such as are used, it is believed, on factory and train windows. The wetting ingredient should aid in the removal of fine dust and deposits. J. Wakelin. *Textile Colorist* **61,** 193-4 (1939).

Improved Lye Baths

The wetting properties of alkali lyes of at least 15° Be. are improved by the addition of mixtures containing phenols and amides of naphthenic acids or of branched aliphatic carboxylic acids having at least five carbon atoms in the molecules. Substances stable and soluble in the alkali lyes and having emulsifying properties may also be added; the amides must not contain amino groups that are not acylated. Chemische Fabrik vormals Sandoz. British Patent No. 491,048.

Casein in Soaps

Soaps, cosmetics, soapy creams, lotions, shampoo preparations, dentifrices, etc., are prepared with an admixture of a concentrated casein solution having an acid reaction. In an example, a soda soap in shavings is mixed with the casein preparation, and with suitable fillers if desired. Eugene Schueller. British Patent No. 488,514.

Refining of Fat

The costs and losses involved in the commercial deacidification of fat such as tallow by (1) spraying with, and (2) mixing with, caustic soda lye, followed in each case by deodorization and/or bleaching, are compared. The second method is considered the more advantageous. H. Kirchrath. *Fette und Seifen* **45,** 172-5 (1938).

Synthetic Detergents

Carbazole compounds are treated with fatty acids or their derivatives and the products sulfonated. Thus carbazole containing about one per cent of anthracene is dissolved in pyridine and lauric acid chloride added. The pyridine is evaporated off *in vacuo* and the residue sulfonated by treatment with sulfuric acid. The products are used as detergents. Soc. pour l'ind. chim. a Bale. French Patent No. 827,185.

Amide Washing Agents

Products useful as washing and dispersing agents are obtainable from carboxylic acids containing a hydrophile group or a radical that facilitates the introduction of a hydrophile group such as an additional free acid group, or an OH, SH, ether, amino or ester group. As an example, 4-*sec*-octylcyclohexylamine is heated with phenoxyacetic acid and the amide obtained is sulfonated with sulfuric acid. Henkel & Cie. G.m.b.H. British Patent No. 484,910.

Factors in Detergency

The principal effects of detergents are wetting, penetration, emulsification and deflocculation. Secondary effects include adsorption, solution, hydrolysis, oxidation and saponification. Perhaps emulsification is one of the more important factors. It is probably true that some compounds remove grease or oil entirely by emulsification, but it seems more likely that the more powerful detergents depend for their effect on the removal of grease by preferential wetting, with subsequent emulsification of the grease. Those detergents which emulsify grease directly may leave fabrics with poor whiteness. The net effect of such detergents is to coat all of the fabric evenly with finely divided soil, a cause of "tattletale gray."

The ease of emulsification depends on the lowering of the interfacial tension by the detergent. Apparently, values of interfacial tension less than about 11 dynes per cm. are necessary in detergent solutions to get emulsions, when adequate mechanical action is applied. With values as low as 1-2 dynes per cm., emulsions may be formed almost spontaneously even without stirring. It should be noted that the interfacial tension values have to do with a detergent's ability to form emulsions, and do not determine stability of emulsions.

There seems to be a practical lower limit to interfacial tensions as well as an upper limit. If the value is too low, the detergent itself is highly adsorbed, requiring an excessive amount of soap or other detergent. This increase in adsorption is connected with the phenomenon of interfacial-tension lowering and also with the fact that finer particles are usually produced in the emulsion, causing a large increase in the particle surface which can adsorp the soap. Both emulsification and deflocculation are much influenced by changes in pH values. This is due in part to the change in the micellar condition of the soap, and in greater part to the increased negative charges on soil and on the surface to be cleaned. Soil removal in general improves with increasing dispersion and deflocculation. L. P. Hall. *Am. Dyestuff Reporter* **27**, P612-6 (1938).

—— ♦ ——

Powdered Washing Agent

Agents in powdered form and containing as detergent a liquid or nonsolid organic substitute for soap, are made by mixing the detergent, such as condensation products of ethylene oxide with octadecyl alcohol or isooctylphenol, with the melt of a water-soluble inorganic salt containing water of crystallization such as a borate or phosphate, at a temperature above its transition point and then cooling the mixture by stirring or spraying it. Bleaching agents or alkaline salts may be added before the mixture is cooled. I. G. Farbenindustrie A.-G. British Patent No. 490,285.

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Soap Texture

(From Page 25)

ited, in general, to soaps which contain very little or no free alkali and are based on stock containing a considerable proportion of coconut or palm kernel oils (upwards of 25 per cent). The silicate tends to produce a hard soap and coconut oil is essential if the lathering powers are to be adequate. The filling solution to be used should be more dilute the larger the proportion of filler it is desired to incorporate. The filler is added during the crutching operation which should be carried on until the soap is thick and hardens quickly on test.

Alkaline sodium silicate with or without sodium carbonate is widely used as a soap filler or builder and is applicable to practically every type of soap. The texture of soaps filled with alkaline silicate is good and firm. The strength of the silicate solution used should be greater the smaller the amount of filler to be added. Where soda ash is used, it should not be allowed to exceed 2½ per cent or the soap will show signs of frosting in storage. Frosting is a tendency to which soaps containing an excess of silicate or carbonates are prone, but this defect can be largely inhibited by careful procedure.

Soda ash is not essential in conjunction with the silicate in the case of cold process soaps, since by crutching to a fairly thick condition, the silicate can be incorporated without difficulty in quite high proportions, if desired.

With regard to toilet soaps, these are generally based on tallow, with the admixture of smaller carefully regulated amounts of nut oils, notably coconut oil, for the purpose of improving lathering properties. In the better grades, a proportion of olive oil or foots may be used. This helps the lathering powers without impairing the keeping properties or odor of the soap as the other low I.N.S. oils are apt to do. This oil, although it produces a soap particularly suitable for sensitive skins, can only be used in small amount on account of its low I.N.S. factor.

The quantity of coconut oil required will depend on the iodine number of the tallow, since the more highly saturated the latter is, the less coconut oil will be permissible in the soap. The quantities required to give the necessary lathering powers may make the soap harder in texture than is required. Excessive soap hardness, such as may be produced by use of stock with an I.N.S. factor of more than 170 or so, will be liable to give trouble during processing, and may give rise to cracking during storage and use.

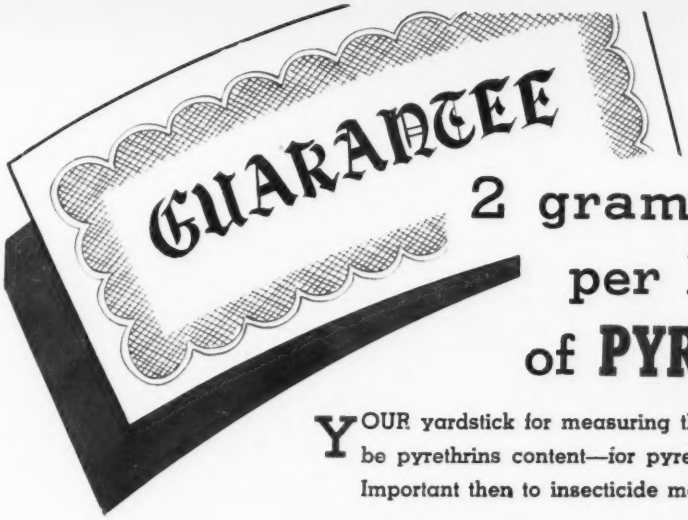
Bleached palm oil may be incorporated with the tallow in toilet stock, and tends to produce a close lathering soap. The use of this material may, however, cause complications on account of variation in color due to the different proportions of palm oil required to offset the properties of the particular tallow used. Of course, it is possible to use a tallow, or mixture of tallows of standardized I.N.S. factors, but this is an ideal which it is not always practicable to attain. Similar considerations apply to bleached palm kernel oil. Here, however, the problem of the development of off-odors due to the oil may sometimes arise.

(To Be Concluded)

Sanitary Products SECTION

A Section of "SOAP" dealing with

Insecticides • Disinfectants • Moth Products
Floor Products • Polishes • Chemical Specialties



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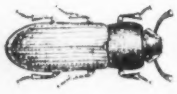

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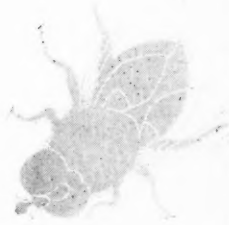

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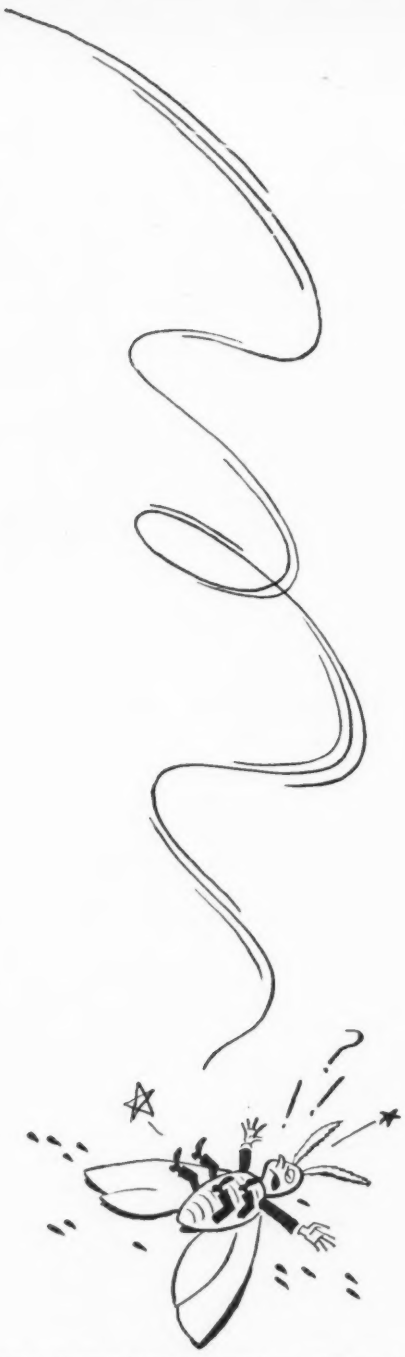

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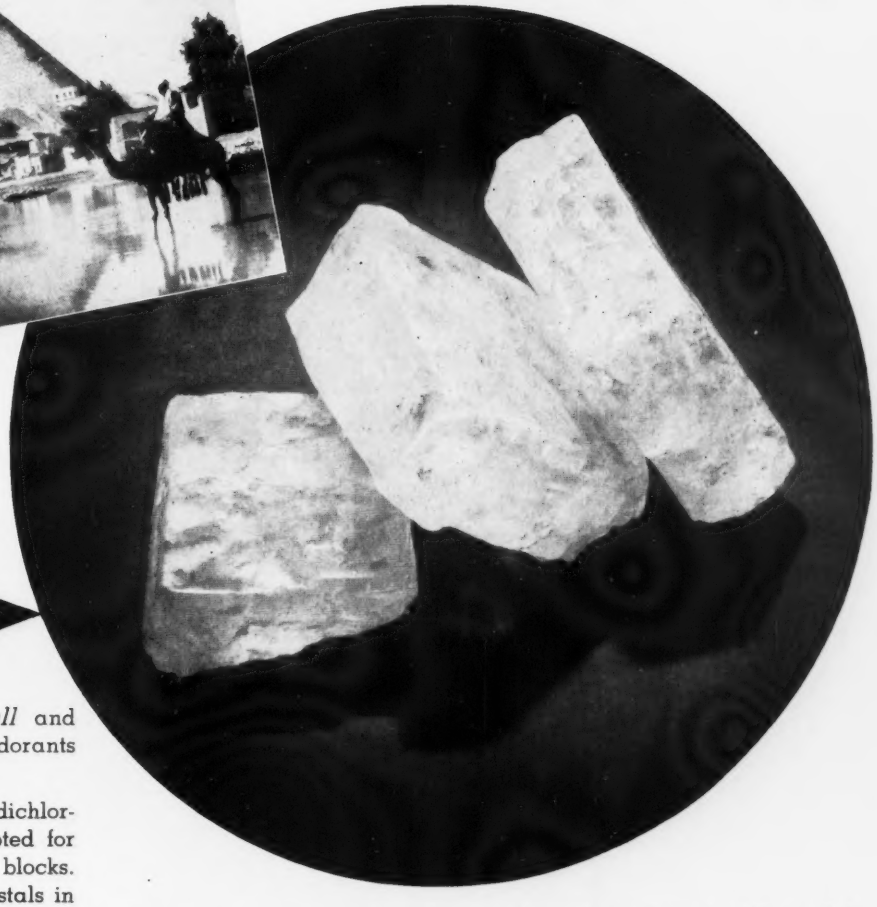

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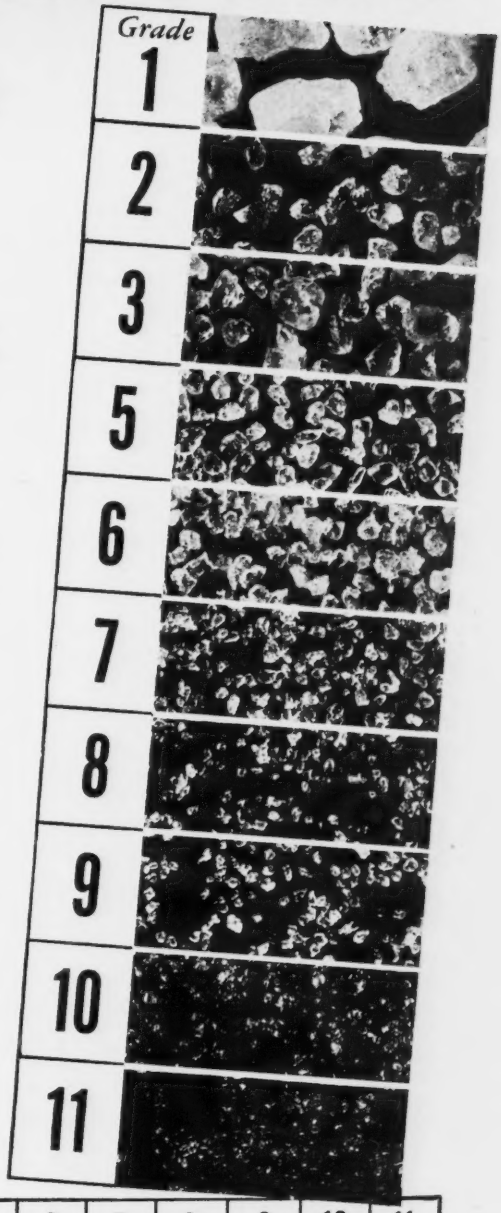

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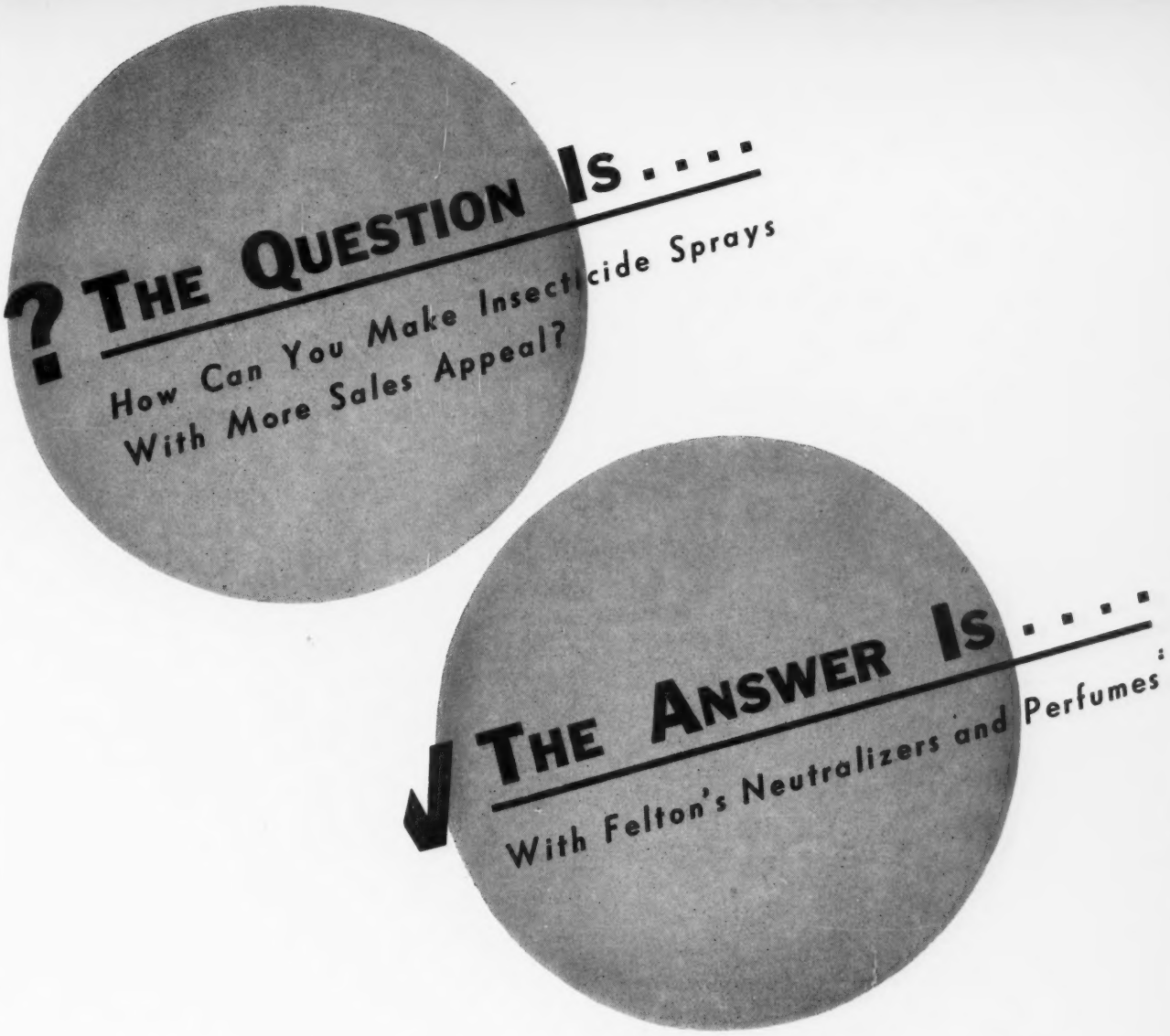

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**According to scientific investigations, Yarmor 302 Pine Oil increases the repellence of pyrethrum and Derris extracts and the toxicity of pyrethrum extract in relation to the amount added. (Agricultural Experiment Station, University of Delaware, Bulletin 196, Technical No. XVI, Dec., 1935.)

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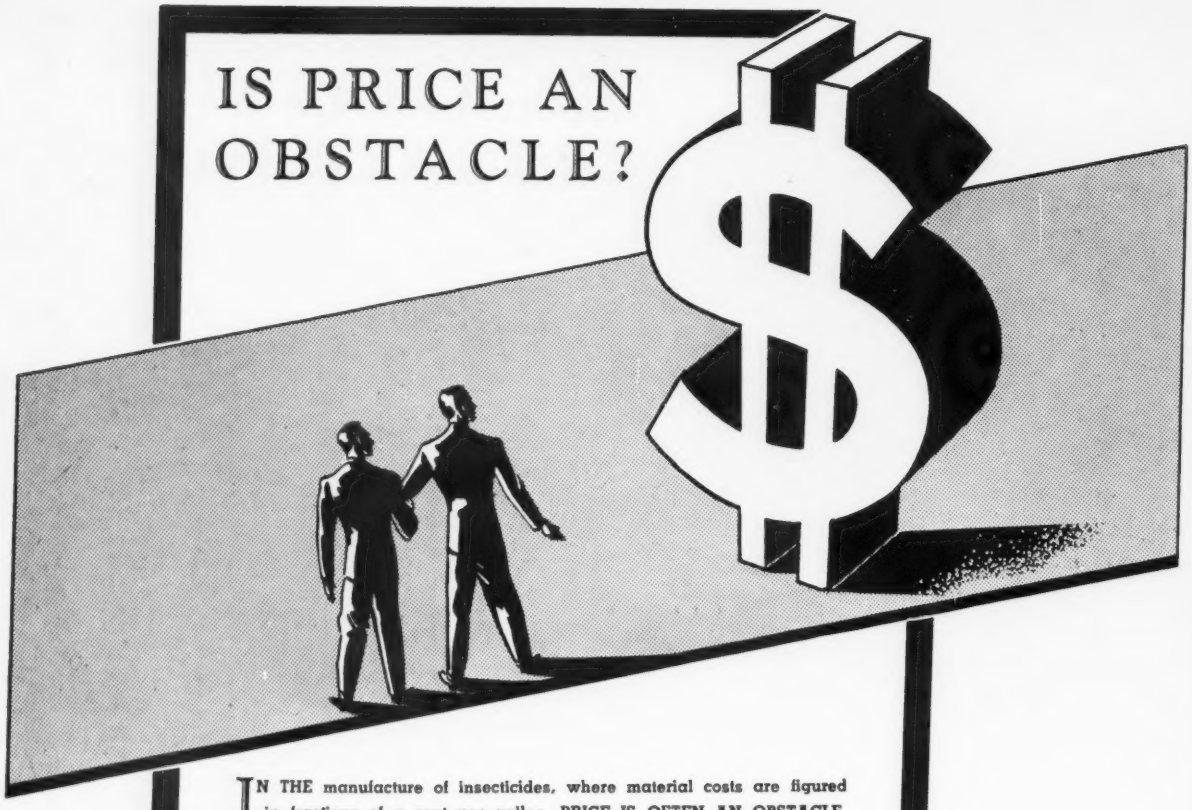
IS PRICE AN OBSTACLE?



IN THE manufacture of insecticides, where material costs are figured in fractions of a cent per gallon, PRICE IS OFTEN AN OBSTACLE. With this in view, M M & R chemists have provided a group of exceptional kerospray odors that are effective and lasting with all commonly used toxic ingredients.

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Sanitary Products

A Section of SOAP

Official Publication, Nat'l. Assn. of Insecticide & Disinfectant Manufacturers

SOME change has taken place during the month in the state insecticide legislative situation. Several proposed insecticide acts have been killed by legislatures. Others are still pending. In most instances, there is noted a willingness to exempt household insecticides from the provisions covering agricultural products, but not in all. Some of the dead and pending bills have shown a wide variation in character and severity. A few are similar, being written after the style of the model bill sponsored by the national insecticide association groups. But, taking the state insecticide legislative situation as a whole, there is little uniformity. That this may lead to much confusion later and considerable trouble for manufacturers, even though only a few states may adopt insecticide laws this year, is obvious.

As a consequence of the present situation, a cooperative plan on the part of the Manufacturing Chemists Association, the Agricultural Insecticide & Fungicide Association, and the National Association of Insecticide & Disinfectant Manufacturers to rewrite jointly the present model insecticide bill with an eye toward the 1941 state legislative sessions, is in the offing. Meanwhile, every effort will be made to postpone action at current sessions on pending insecticide bills. Between now and 1941, much can be done to coordinate and agree upon legislative efforts among manufacturers, state agricultural departments, and others. In view of the present muddled situation, this certainly appears the part of wisdom rather than to permit any ill-considered legislation anywhere to become law.

FROM St. Louis comes word of the results of a novel 1938 W.P.A. project against Japanese beetles. For a number of years, traps have been set out to catch the Jap beetles and a record has been kept. It seems that last year, something over 14,000 beetle traps were set out in the St. Louis area and they caught exactly 28 beetles, or as a scientist would state it, .002 beetles per trap. Now, whether the poor catch was due to a scarcity of beetles or their refusal to be fooled year-after-year by the same traps, is evidently a moot question. If there were no beetles, why hire some seventy men to tend the traps? And if there were beetles, why did they pass up these W.P.A. traps? Maybe they were Republican beetles and were suspicious of the W.P.A. label. But, at any rate, we feel that a monument of some kind should be erected in memory of the 28 bugs who died that the W.P.A. might live. Although these bugs originated in the soil of fascist Japan, their service to democracy and the W.P.A. should not pass unnoticed.

Photo Heetfield Tillou

WHITE S

WHITE shoe cleaners have received but casual treatment in the technical literature although their commercial importance has grown by leaps and bounds over the past two or three years. It would appear that "everybody and his brother" are now putting out cleaners or polishes, —or whatever it is desired to call them,—for white shoes. New brands have popped onto the market almost with machine-gun rapidity, some good, some fair, and many not-so-good. To meet the upward surge of demand, manufacturers have rushed products to market without the necessary research and development work, with the usual and inevitable result. Most manufacturers have aimed, or in their hurry intended to aim for the ideal product, one which has wide and good coverage, gives a perfect finish when dry, and which will not rub off. Few have hit the target, but several have come close.

The discussion here will be divided into five general sections, each treated as independently as possible, as follows: 1. formulation; 2. equipment; 3. production; 4. testing and analysis; 5. packaging. In order to avoid undue length, it is taken for granted throughout that the reader has a general understanding of chemical operations and equipment. On the whole, the discussion will be held down to representative types of cleaners. Before starting, it is best to outline again briefly the requirements of a good white shoe cleaner. These are first, detergency to remove superficial stains and dirt; second, whitening by deposit of a dry white film as closely approximating the original appearance of the leather as possible; and third, adherence or resistance of film to normal conditions of wear such as contact with clothes, etc.

It is also necessary to understand that this combination of effects shall be attained without injury to the leather, and with a minimum effort on the part of the person applying the polish. It so happens that these three effects require, in general, three individual types of components. These latter are a detergent which may be either a solvent, an alkali or a soap or any combination thereof, a whitening agent which may be either an individual product as compound such as a titanium pigment or a combination of pigments such as clay and lithopone, etc., and finally an adhesive such as a gum or shellac or resin solution which may or may not also serve as a suspending medium for the pigment and a solvent for the detergent as well.

Exceptions to these general divisions are the so-called lacquer types of products where a nitrocellulose solution is used as the suspending and adherent solution simultaneously with the active solvents present acting as a partial detergent. Another exception is the so-called powder or stick type which lacks either an adherent or a detergent depending upon the exact formulation in question.

There might be also mentioned at this point the use of colloidally dispersed waxes either in the form of the self-polishing type or the dull-drying type likewise depending upon the individual requirements or

SHOE CLEANERS

First of a series of three articles on composition, production, testing, packaging and equipment

By Charles S. Glickman

desires of the formulator. The presence of such a component present either as an aqueous solution or a solvent solution, enables the user to create a glossy effect by simple buffing following the application of the polish to the leather.

With these three general components and their requirements in mind, the lists on the right outline the ordinary ingredients under their respective applications. To these lists should also be appended the following for the special purposes outlined:

Bentonite—Suspending and bodying agent.
Zinc Stearate—For lending slip to the polish.
Ultramarine—For intensifying the whitening effect.

Sodium Benzoate
Sodium Salicylate
Phenol
Formaldehyde
Salicylic Acid
Essential Oils
Benzoic Acid
} Preservatives for gum solutions.

With this list of available raw materials stated for each of the indicated three general purposes, consider these components in further detail before proceeding to the matter of composition and types of products. Little can be said for the subject of detergents other than the fact that alkaline salts and soaps are generally used in aqueous solutions or in emulsions. Certain of the soaps, however, such as the amine soaps can be dissolved so as to be present in hydrocarbon solutions. Liquid and solid soaps are miscible in alcohol as are the sulfonated ones.

Detergents	*Whiteners*	*Adherents*
Trisodium Phosphate	White Lead	Gum Karaya
Disodium Phosphate	Zinc Oxide	Gum Tragacanth
Sodium Silicate	China Clay	Dextrine
Triethanolamine	Bismuth Subnitrate	Glue
Liquid Soaps	Ppt'd Chalk	Gelatin
Triethanolamine Soaps	Whiting	Albumen
Alcohol	Zinc Sulfide	Alkaline Shellac Sols.
Solid Soaps	Lithopone	Alkaline Casein Sols.
Acetone	Titanium Dioxide	Solvent Gum Sols.
Sulfonated Alcohols	Titanium Pigments	Soaps
Borax	Magnesium Oxide	Sodium Silicate
Naphtha, etc.		Dispersed Waxes
Carbon Tetrachloride		Alcoholic Gum Sols.
Other Solvents		Sodium Alginate
		Nitrocellulose Sols.

They may be used therefore, speaking of the soaps in general, as both detergents and emulsifying agents depending upon the type of formulation desired.

The matter of pigments requires somewhat more detailed consideration. Pigments are used for whitening effect and therefore such details as their covering power are of vital importance as is their weight and bulking power. The list given below outlines this information.

It will be observed from the pigment table under the heading of "hiding power" that pure titanium pigment has the highest degree of whiteness and coverage. It is this fact which enables the manufacturer to dilute the former with extenders or poorer whitening agents such as china clay, chalk, etc., so as to produce a larger volume of pigment in the package, and at the same time result in a more than good whitening effect. Some of the blends that are

Pigment	*Sp. G.*	*Wgt./Gal. lbs.*	*Hiding Power (a)*	*Cost/lb.*
China Clay	2.62	21.82	..	$ .010
Lithopone (50% ZnS)	4.20	34.99	44	.065
Lithopone (28% ZnS)	4.30	35.82	27	.045
Titanox "A"	3.90	32.50	125	.165
Titanox "B"	4.30	35.82	40	.061
Titanox "B-30"	4.24	35.31	46	.061
Titanox "C"	3.13	26.07	48	.061
Titanox "M"	3.10	25.82	47	.061
Basic Lead Sulphate	....	52.00	13	.065
Zinc Oxide	5.66	47.00	20	.065
Zinc Oxide (Leaded 25%)	5.95	49.56	..	.065
Whiting	2.71	25.57	..	.010

Note (a) The hiding power is considered to be the amount of pigment required to completely cover a standard amount or area.
Note (b) The cost per pound is an approximation.

quite commonly used are listed as follows:

200 parts	TiO_2
80 parts	Clay
15 parts	$BaSO_4$
5 parts	TiO_2
75 parts	TiO_2
75 parts	Chalk
30 parts	TiO_2
70 parts	$BaSO_4$
25 parts	TiO_2
75 parts	$BaSO_4$
100 parts	TiO_2
20 parts	Clay

Further combinations that may be employed are lithopone and talc or zinc oxide or chalk or clay. The amount of pigment generally present in this sort of product ranges from as low as some 6 per cent to as high as 26 per cent for the liquid type and from 50-70 per cent for the paste type white shoe polish. Such additional pigment-like products as bentonite can be added in small amount to prevent caking in the container. Zinc stearate may be likewise incorporated to a small degree to lend slip to the product and facilitate its application to the shoe. Where it is preferred not to add bentonite because of its slight tendency to yellow the product, a small amount of asbestine usually about 4 per cent in order to facilitate reshaking. Where bentonite is used, however, the slight yellowness may be counteracted in some part by the use of small amounts of ultramarine incorporated with the pigment.

THE subject of adherents and suspending agents,—a matter of extreme importance since non-rub-off cleaners are demanded, is one worthy of more than passing mention. The various adherents and suspending agents will be considered from the standpoint of their advantages as well as their respective faults. Gums such as karaya and tragacanth are the most commonly encountered product used for this purpose. They are prepared for use by dispersing or dissolving them in cold or warm water and then either letting them swell to their maximum viscosity or else treating them in a colloid mill to insure a smooth and even solution. These solutions are characterized by their high viscosity and suspending power. Usually but very small amounts are required to create solutions of proper viscosity. These solutions are however subject to decomposition by bacterial or mold action and they are best protected against such decomposition by the use in very small amounts of any of the preservatives listed in the materials table. These solutions, of course have the advantage of being practically colorless and drying to a well adhering finish.

The following materials,—dextrine, glue and gelatin, have somewhat similar properties as they also give viscous solutions having high suspending powers. They must be similarly preserved against decomposition. Albumen, casein and shellac serve a similar purpose but their function is mainly as an adherent, requiring as in the case of the other materials, suitable preservatives. Their solution in aqueous form requires the use of alkalies such as borax or ammonia. The amines can also be used. Where it is desirable that these films be flexible, triethanolamine is a suitable alkalizer.

Still along the line of discussion of suspending and adherent agents, we come to the use of certain natural gums such as damar dissolved in organic solvents, naphtha or carbon tetrachloride. These solutions can be incorporated with emulsions. For that matter, shellac dissolved in spirits can also be used although a somewhat more difficult type of formulation is required since water precipitates this solution.

We now come to consideration of such agents as sodium alginate, a vegetable derivative, which also possesses excellent adherent qualities, sodium silicate which is a good adherent and the common soaps which likewise are applicable to this end, all being water soluble. Dispersed wax solutions commonly referred to as self-polishing waxes may serve as partial adherents and also in the preparation of formulae which can be buffed to a gloss. The final items on the list of adherents are nitrocellulose solutions, used in the preparation of the so-called white lacquer finishes; and glycol stearate, an aliphatic ester of diethylene glycol. This latter compound which unfortunately has not been recognized as a shoe polish component can be incorporated into aqueous solutions and serve a triple purpose, adherence, suspension and gloss. Dispersions of this compound in amounts ranging from as low as one up to 10 per cent result in the creation of viscous media of high emulsifying ability, excellent suspension powers, colorless solutions, non-decomposing and capable of a degree of gloss on buffing. (Bentonite also belongs partly in the class of suspending agents as it is used to prevent excessive pigment caking in the package.)

AS was previously mentioned, there are two general classes of white shoe cleaners as well as several other kinds which are hybrids and can therefore be considered offshoots of the two main types. They are liquid polishes and paste polishes with the so-called white shoe soaps, and stick types representing the hybrids. Compositions (all in parts by weight) worthy of study follow:

Liquid Products

1. Commercial chip soap..... 25
   Water 500
   Sodium Silicate 25
   Shellac Solution..... 50
   Titanium Dioxide 105
   China Clay 20

   Note: The soaps used should be free from fillers, etc.

   Process: The soap is dissolved in the water with the use of moderate heat and agitation. The sodium silicate is then added with stirring to the cold soap solution and the pigments stirred in. To this suspension is then added the shellac solution prepared by dissolving shellac and triethanolamine in water in the ratio of 60-280-20 respectively. (All parts being by weight). The finished product can be passed through a pump or colloid mill to insure adequate dispersion.

2. Starch 20
   Soap chips or powder..... 30
   Sodium silicate 5
   Naphtha 25
   Titanium Dioxide 200
   China Clay 80
   Water 1000

   Process: The starch is dissolved in about 100 parts of water. The soap chips are dissolved in the remain-

ing 900 parts of water and the sodium silicate added. To this is then added the naphtha with agitation to insure emulsification. The starch solution is mixed into a paste with the pigments and added to the solvent-soap-silicate solution with sufficient stirring to create a uniform mixture. This emulsion product is best processed by passage through a colloid mill.

3. Titanium Dioxide 75
Bentonite 1
Soap solution 150
Shellac solution 275

Process: The shellac solution is prepared as described in No. 1. The soap solution is made by dissolving 7 parts of soap in 300 parts of water and 300 parts of alcohol (denatured). The pigments are mixed into the soap solution; the shellac solution is then added with agitation to insure uniformity. A colloid mill may then be used for the final mixing.

4. Soap solution 45
Shellac solution 45
Titanium Dioxide 10
Whiting 5

Process: Same as for the preceding formula. The shellac and soap solutions are prepared as described in the preceding products.

5. Lithopone 22
Dextrine 3
Borax 0.5
Water 74.5

Process: The dextrine and borax are dissolved in the water and the pigment added with sufficient agitation to insure adequate dispersion.

6. Titanium Dioxide ..... 250 pounds
Shellac solution..... 89 gallons
Soap solution..... 212 gallons

Process: The preparation of this formula as well as the exact proportions of the various components is more fully described later.

7. Lithopone 20-22
Disodium Phosphate 1-2
Bentonite 1-2
Perfume 0.5-0.3
Water 79.9-73.8

Process: The phosphate is dissolved in the water and the pigments mixed and stirred in. The perfume may then be added. A suitable adhesive chosen from the preceding list of such products may be added in small amount together with the requisite amount of preservative by first dissolving in a portion of the water.

8. Titanium pigment 20-24
Gum Damar 2-4
Triethanolamine 0.9-1.2
Oleic Acid 2-2½
Carbon Tetrachloride 10-12
Naphtha 12-14
Water 53.1-42.3

Process: The naphtha and other solvent are mixed and the gum dissolved in the mixture. The pigment is then mixed with the gum solution. The alkali and water are mixed, slightly warmed and the acid added with stirring. The soap solution is then vigorously agitated while the pigment-gum-solvent solution is stirred into it.

10. Titanium 5
Barium Sulphate 15
Gum Damar 4
Carbon Tetrachloride 10
Solvent Naphtha 13
Triethanolamine Linoleate.... 3
Water 50

Process: Same as for the immediately preceding product. It should be noted that these two formulae coming from different sources are practically identical.

11. Glycol ester of Oleic Acid.... 5
Naphtha 20
Toluol 25
Titanox "C"* 30
Wax emulsion (self-polishing) 60
Water 20
Trichlorethylene 40
Glycol ester of oleic acid..... 1

**Note*: In place of the glycol oleic acid ester, the glycol ester of stearic acid, previously described, can be used although in smaller amount. In place of the Titanox "C" a 75-25 mixture of Titanium Dioxide and China Clay can be used. In place of the trichlorethylene, carbon tetrachloride can be employed.

Process: The first part of the formula is thoroughly mixed yielding a solvent pigment mixture. To this is then added the diluted water emulsion wax mixture with rapid agitation. Then the last solvent and emulsifier mixture is added with continued agitation until the emulsion is uniform.

12. Shellac solution....60 parts by vol.
Soap solution .....40 parts by vol.
Wax solution .....20 parts by vol.
Pigment (TiO_2 and China Clay—4 lbs. to each gallon of the above solution.

Note: The shellac solution is prepared by mixing shellac, borax and water in the ratio of 2 lbs. shellac and 4 oz. borax to each gallon of water. The soap solution is prepared by dissolving 2 lbs. of soap to each gallon of water. The wax solution can be a water emulsion self-polishing type of product. The pigment is added in the ratio of 4 lbs. of the mixed pigment (75 parts TiO_2 to 25 parts of clay) to each gallon of the mixed soap, wax and shellac solutions. This forms a *white concentrate* which is then diluted by adding to each *single* part of it by volume, 3 volumes of a gum solution made by dissolving 1 lb. of gum karaya or tragacanth to each gallon of water and adding a small amount of preservative. The final mixture is then stirred till uniform.

Paste Products

1. Soap solution 250
Titanium Dioxide 150
Shellac solution 25

Process: The solutions are mixed and the pigment dispersed in them by means of a paste mixer following which the paste is treated in a colloid mill. The soap solution consists of 5 parts of soap dissolved in 62.5 parts of alcohol and 25 parts of water. The shellac solution is made by dissolving 60 parts of shellac and 20 parts of triethanolamine in 280 parts of water. All parts in both solutions are by weight.

2. Water 1000
Soap chips or powder 30
Soda silicate 5
Naphtha 50
Titanium Dioxide 400
China Clay 150

Process: The soap and silicate are dissolved in the water and then the solvent added with stirring until the emulsification is complete. The mixed pigments are then worked in until the paste is uniform following which a colloid mill treatment is recommended for better dispersion.

3. Water 1000
Triethanolamine oleate 30
Naphtha 15
Carbon tetrachloride 10
Titanium Dioxide 300
China Clay 200

Process: Same as for the preceding formula No. 2.

4. Soap chips or powder..... 60
Soda silicate 5
Naphtha 30
Starch 50
Titanium Dioxide 250
Whiting 200
Talc 25
Water 1000

Process: Same as for the preceding formula No. 2.

5. Lithopone 60-65
Soap chips 6-8
Soda Silicate .....¼-½
Perfume .....¼-½
Water 26-33

Process: The silicate and soap are dissolved in the water and the pigment dispersed in the solution with agitation till uniform in appearance.

(To Be Continued)

Theater Spray

A liquid for deodorizing the atmosphere in enclosed spaces may be made as follows: 100 parts of distilled olein are dissolved in 100 parts of alcohol and saponified with 48 parts of triethanolamine at 50-60° C. To this are added 25-50 parts of a perfume mixture, such as of pine-needle, rosemary, spike, citronella, etc. From 10 to 25 parts of 40 per cent formalin are then mixed in. In use, 10-25 grams of the mixture is stirred up with 1 liter of water. *Seifensieder-Ztg.* **66,** 6 (1939).

Evaluation of Germicides

A discussion of some recent methods for evaluating antiseptics and germicides

By Dr. Cecil G. Dunn*

PERMIT me to say a few words about the phenol coefficient test before discussing some of the recently proposed methods for evaluating germicidal substances. The phenol coefficient test, in some form, is used in almost every civilized country in the world. It is one of the standard procedures used in testing disinfectants by the Food and Drug Administration, which, during the fiscal year ending June 30, 1937, examined 350 samples of disinfectants, germicides and bactericides. It can give much valuable information about a disinfectant, if a sufficiently large number of test organisms are used under a variety of conditions. The coefficient obtained from a test may be used in determining the dilution of disinfectant equivalent to a 5 per cent phenol solution. Indeed, the results from a few tests only, may be sufficient to indicate the worthlessness of a substance.

But the phenol coefficient test has limitations and it is for this reason that other methods of evaluating substances have been proposed as supplements to this test. Disinfectants which are quite unlike phenol and those which are relatively insoluble in water should not be examined by this method. Evidence concerning the effectiveness of the compound under practical conditions —the toxicity of the substance to tissue, its ability to penetrate tissue matter, its chemotherapeutic value— are not given by this test.

A number of methods for evaluating germicidal substances have been proposed during the past few years. The present discussion will be limited to a few which seem to indicate promise or which appear to be rather unusual in nature. Some of these methods involve the action of germicidal substances on animal tissues as well as against microorganisms. Toxicity indices have been devised to indicate the relative toxicity for tissue cells and microorganisms.

Of the methods proposed, those of Salle and his associates and Nye appear to offer considerable promise.

In the most recent method proposed by Salle and his coworkers[1], the effect of germicides on tissues is determined by adding 0.5 cc. of a suspension[a] of minced chick hearts from 10- to 12-day old embryos to 2.5 cc. of a mixture of 1 part of defibrinated horse serum and 3 parts of embryonic extract in medication tubes (the extract being prepared by mincing 12-day embryos and diluting to 5 times the volume with Tyrode's solution, centrifuging and using the clear supernatant liquid). The tubes are incubated at 37°C. in a water bath. 2 cc. portions of dilutions of the germicide are prepared and heated to the temperature of the test (37°C.). The germicide is then added to the medication tube, the final volume being 5 cc. in each case. At the end of 10 minutes, the tubes are removed from the bath and the germicidal solutions aspirated from the fragments of chick heart tissue. Tyrode's solution is added and the supernatant fluid again aspirated. 1 cc. of Tyrode's solution is finally added to each tube and the fragments are embedded in plasma in Carrel flasks. The dilution of the germicide which prevents the cells from proliferating after incubation for 72 hours or longer is designated as the killing dilution.

In determining the effect of the germicide on bacteria a similar procedure is followed. 2.5 cc. of a mixture of 1 part of defibrinated horse blood serum and 3 parts of embryonic extract are placed in the medication tube in the water bath at 37° C. 0.5 cc. of a 22- to 26-hour culture of the test organism is added and finally 2 cc. of a dilution of the germicide heated to 37° C. After 10 minutes the tubes are removed from the bath and a 4 mm. loopful of material transferred from each medication tube to a corresponding tube of sterile broth. Sub-subcultures are made to eliminate possible bacteriostatic effects.

From the data secured by testing various germicides against different test organisms and the embryonic tissue, a toxicity index may be calculated. The toxicity index is the ratio of the highest dilution of the germicide which prevents growth of the embryonic tissue to the highest dilution of the germicide required to destroy the test organism in 10 minutes.

Obviously, the germicide with a small toxicity index—less than one —is desirable. Lugol's solution of iodine appeared to give most favorable results[1] in one series of investigations by Salle and his associates.

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[a] 1.0 cc. of the suspension contains approximately 100 fragments of the embryonic chick heart in Tyrode's solution, each fragment being about 0.5 mm. in diameter.

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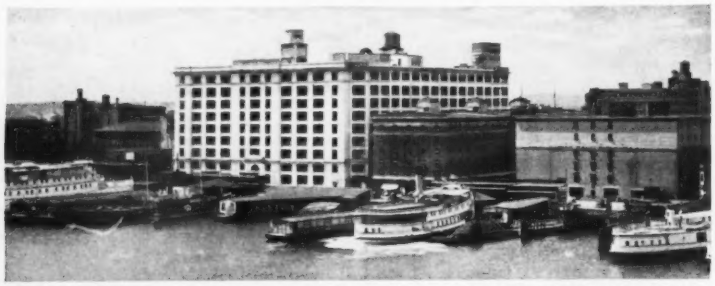

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This test furnishes useful data. It compares the toxicity of an agent towards bacteria and tissue in the presence of organic matter (tissue extract and serum). Some information is made available concerning the practical dilution of the germicide to use. It is, however, a rather laborious procedure, requiring considerable time.

Dr. Nye[2] has developed a method in which the toxicity of the antiseptic towards leucocytes may be estimated. A mixture of 0.25 cc. of defibrinated human blood and 0.25 cc. of a dilution of the antiseptic (prepared with Locke's solution) is placed in each of a series of tubes and incubated at 37° C. for exactly 10 minutes. One drop of a heavy suspension of destroyed Staphylococcus aureus is then added to each tube. The tubes are rocked slowly at 37° C. for 20 minutes. Smears are made from the contents of the tubes and stained with Wright's stain. Using the microscope, the number of neutrophylic polymorphonuelear leucocytes judged to be destroyed or badly injured at the time the bacteria were added, are determined. Cells are considered to be functionally inactive if they contain 0 to 3 cocci. Ruptured cells are not considered.

The suspension of cocci used in this test is prepared by taking up the growth from 2 large slant cultures (tubes 200 x 25 mm.) with sterile 0.85 per cent saline, centrifuging, washing the cells two additional times with sterile saline and finally suspending the cells in 5 cc. of sterile Locke's solution. Heating the suspensions at 53° C. for 6 hours destroys the cocci.

A 1/1100 dilution of iodine was not toxic to the leucocytes for 10 minutes in one test. Chlorine solutions were extremely toxic while mercury solutions varied in their toxicity.

This procedure is basically sound and adds a useful method for evaluating an antiseptic.

Bronfenbrenner, Hershey and Doubly[3, 4] have suggested a rather novel method for evaluating the chemotherapeutic properties of a germicide. The depressant effect of various dilutions of a germicide on oxygen consumption by tissues and bacteria, as measured by a Warburg-Barcroft apparatus, is taken as the measure of the destructive action. The rate of consumption in cubic millimeters is plotted against time.

The test is carried out in the following manner: 0.1 gram of minced adult mouse's liver is mixed with 2 cc. of saline on the floor of the special flask. 1 cc. of a M/10 phosphate buffer at a pH of 7.4 and 1 cc. of a 5 per cent sodium succinate solution are then added. In the arm of the flask is placed 1 cc. of an aqueous dilution of the disinfectant. When the test is ready to be carried out, the disinfectant is allowed to flow down into the suspension on the floor of the flask. The potassium hydroxide in a cup inside of the flask absorbs any carbon dioxide from the system. Accordingly, oxygen pressures may be computed and the data given in terms of cubic millimeters of oxygen consumed during a given time interval.

The test with the bacterial suspension is similar to the above procedure, with the exception that the following materials are added to the floor of the flask: 1 cc. of a 5 per cent glucose solution, 1 cc. of M/10 phosphate buffer at pH 7.4, 0.4 cc. horse serum, and 1.6 cc. of saline with approximately 3×10^9 bacteria from centrifuged 24-hour cultures of E. coli in broth.

In control tests, water is substituted for the disinfectant.

By plotting the percentage inhibition of the rates of oxygen-uptake obtained during the interval between the fifteenth and twentieth minutes (which is arbitrarily chosen) against the concentration of the disinfectant, it is possible to read from the chart an interpolated value for the concentration of disinfectant producing 50 per cent inhibition in the rate of oxygen consumption. This concentration may be designated by *C*. By comparing the *C* values of different disinfectants with phenol, "phenol coefficients" may thus be obtained. The phenol coefficient would be $C_{phenol}/C_{disinfectant}$; the toxicity index, $C_{bacteria}/C_{liver}$.

The authors state that this method is simple, flexible, and direct. Anaerobic bacteria would not be tested by this method; however.

Hunt[5] has devised a method in which the therapeutic value of a germicide may be estimated. He inoculates the abdomen of albino mice with "invasive" strains of Staphylococci, which will normally produce lesions from 3 to 10 mm. in size. By mixing a dilution of the germicide with the culture at the time of injection or afterwards, the effectiveness of the germicide can be told by an absence of necrosis and suppuration at the cite of injection.

The procedure is as follows: The abdomens of albino mice are shaved one day before the test. Control mice are inoculated intracutaneously with 0.1 cc. of a 1:1 dilution of a broth culture of Staph. aureus. Other mice receive a mixture of 0.05 cc. of the undiluted culture and 0.05 cc. of a dilution of the germicide; while still others receive 0.05 cc. of the culture and later 0.05 cc. of a dilution of the germicide. Five mice are used in each test.

Control animals should be inoculated with the germicide for the germicide may cause necrosis.

One disadvantage to this procedure is the difficulty of standardizing it. Results from different laboratories may vary considerably. However, this test may serve as a valuable supplement to other procedures in the investigation of new chemical agents.

Etchells and Fabian[6] have suggested a method for determining the irritating effect of chemical compounds on the skin of animals. The hair of rabbits on an area 8 by 16 cm. is clipped off by means of scissors and then carefully shaved with a sharp razor, irritation being avoided. The area is washed with sterile water and the tests initiated one day later.

The rabbits are strapped to a board. Glass rings, 25 mm. in diameter and 20 to 25 mm. high, are temporarily attached to the animal

over the shaved areas by means of rubber bands. The rings are sealed in position by flexible collodion, 0.5 to 1 cm. deep. After the collodion has dried for 5 to 10 minutes, the rubber bands are removed and 3 to 5 cc. of the chemical agent are added to each ring. Cork stoppers are inserted into the rings to keep the solutions intact. After contact with the skin for 30 minutes, the solutions are removed by absorbent cotton with the aid of forceps. The flexible collodion is removed along with the rings, using ether, if necessary.

The treated area is washed with sterile distilled water and observed after 30 minutes, 5, 24 and 168 hours.

Charlton and Levine[7] in 1937 published the details of their method for determining the germicidal action of chlorine compounds. The procedure follows: 100 cc. of the test solution are placed in a 200 cc. round-bottom pyrex flask, provided with two openings: one on the top fitted with a stirrer, the other, on the side near the top, plugged with cotton. One cc. of a spore suspension of Bacillus metiens is introduced through the side opening after the test solution has been brought to the desired temperature. Five cc. samples are withdrawn from the flask at desired intervals (stirring the solution just before removing the sample in each case) and deposited in 150 cc.-Erlenmeyer flasks containing in the 45 cc. of sterile distilled water slightly more than sufficient sodium thiosulphate to react with the available chlorine and prevent bacteriostasis in subculture media. Dilutions are made from the contents of the Erlenmeyer flask with 9 cc. sterile distilled water blanks. Samples are plated with standard nutrient agar and incubated for 24 hours at 30° C. before observations are made.

The spores are prepared by inoculating the surface of agar in Kolle flasks with broth cultures of Bacillus metiens, incubating the flasks at 30° C. for two weeks, scraping the growth from the surface of the agar, drying the spore mixture in a partial vacuum at 30° C., grinding the mixture in a sterile agate mortar, and mixing the spores with sterile powdered lactose. The spore preparation is stored over calcium chloride in a desiccator.

The suspension is made up by placing approximately 0.02 gram of the spore-lactose mixture into 10 cc. of sterile distilled water, shaking to break up the clumps and filtering "through a fine grade of filter paper."

The laboratory testing of fungicides presents certain problems. Many of the pathogenic fungi form rather tough mycelial mats when grown on artificial media. The question arises, should this growth be subjected to the action of germicides in its natural growth form or should it be macerated first?

Reddish and Burlingame[8, 9, 10] have recently (1938) published an account of a procedure which they have been investigating for some time. Using a dry sterile cotton swab, petri dishes are streaked with a 5-day culture of the mold. The plates are incubated for 5 days at room temperature. The agar with its mold growth is then cut into 1 cm. squares. The fungicide to be tested is poured over the surface of the culture so as to entirely flood the plate. After 5-, 15-, and 30-minute intervals, a square of agar with the mold growth is removed, and placed in a tube containing 10 cc. of sterile broth. By shaking the tube gently for 5 minutes the excess of germicide is washed out of the culture. At the end of this time, the block of culture is removed from the broth and spread, culture side down, over the surface of a plate containing sterile Sabouraud's agar. After incubation for three weeks, the plates are observed for growth.

According to Reddish, an effective fungicide should destroy the mold within five minutes. Germicides not destroying the molds within 30 minutes have been found to be ineffective under clinical conditions.

In the above procedure, the rate of penetration of the fungicide is an important factor.

Suspensions of macerated mold growth may be used in phenol coefficient tests by the F. D. A. method in exactly the same manner as one would use broth cultures of the test organism. The mold may be grown in bacterial culture tubes containing liquid media or on the surface of agar in a petri dish. Uniform results have been obtained by growing pathogenic molds for 8 to 12 days in Sabouraud's dextrose broth, macerating the fungus growth with sterile glass beads and using the supernatant suspension after permitting the tubes to stand for 15 minutes at the temperature of the test.

The fungi may be grown on Sabouraud's dextrose agar in petri dishes at 30° C. until the plates are covered with a heavy growth of the mold. This fungus growth is then scraped, or torn, from the agar by means of a hooked nichrome needle and placed in a sterile glass bottle, which is fitted with a rubber stopper and which contains small pieces of broken glass; 25 cc. of sterile normal saline are added to the bottle and the mixture shaken vigorously for several minutes. The heavy suspension thus formed is transferred aseptically to two sterile test tubes and incubated in a water bath at 30° C. for at least 10 minutes before the test is made. The heavier particles settled to the bottom of the tubes and the supernatant suspension is employed for the tests in exactly the same manner as one would use bacterial cultures grown in Reddish or other Broth.

Williams adds the antiseptic to an agar shake culture of the test organism and then subjects the medium to a pressure of 60 pounds in one of his procedures.

Some compounds are relatively insoluble in water, but they may be solubilized by admixture with sulphonated oil or some other agent. The sulphonated oil causes a uniform dispersion of the compound in water. Benzylphenols vary inversely in germicidal activity in proportion to the amount of sulphonated oil used. By plotting the phenol coefficients of various mixtures of germicide and oil against the ratio of germicide to

(*Turn to Page* 127)

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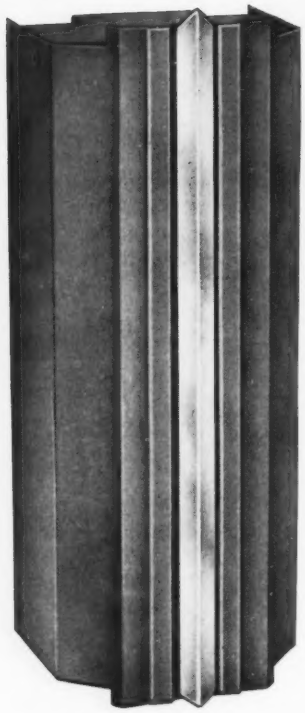

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Fly Spray Testing

A discussion on the theory of evaluating liquid household insecticides by the Peet-Grady Method.

By C. I. Bliss

FOR most insecticides in common use the concentration of specified active ingredients determines the market value of any given sample. The liquid household sprays, on the other hand, contain ingredients which either cannot be measured adequately in chemical terms or are trade secrets of the individual manufacturer. Under these circumstances chemical analysis must be replaced by the more difficult biological standardization, a problem which has long been faced by manufacturers of drugs and whose experience parallels that of the dealer in insecticides.

Usually the first stage in the development of a bioassay has been to define as standard in toxicity or potency any mixture or solution of a given type which would produce some specific biological response under a particular set of conditions. The original Peet-Grady test[9] falls in this category. But in nearly every case which has been studied closely, the experimental animals or cultures have been found to vary too considerably and too erratically in their susceptibility to serve as absolute standards. This led to the second stage in the development of a bioassay, to the introduction of standard preparations of drug or insecticide with which the unknown or sample could be compared. If the unknown produced the same response as the standard when tested in parallel, it was passed as of equal potency or toxicity. The Official Control Insecticide of the National Association of Insecticide and Disinfectant Manufacturers[10] is such a standard. For effective use it is necessary, of course, that the difference in response between standard and unknown be attributable only to differences in toxicity with the smallest practicable experimental error. The third stage in the development of a bioassay, therefore, is the identification and elimination of sources of heterogeneity which may bias the comparison of standard and unknown. For liquid household insecticides this stage is typified by the studies of Murray[7] and of Miller and Simanton[6, 12] on the differential susceptibility of male and female flies in the Peet-Grady test.

At the level of technique represented by the third stage, it is possible to determine within measurable odds whether a given sample is less toxic, equitoxic or more toxic than the standard but not how much more or less toxic than the standard it may be. The concentration of the unknown must be adjusted more or less arbitrarily and then tested again for equivalence with the standard. The fourth stage in developing a bioassay is to shift from a qualitative to a quantitative basis, to the determination of the relative toxicity of a sample and its error. Tattersfield and Martin[13] have determined quantitatively the relative toxicity of derris constituents with aphids but the technique has not yet been applied to evaluations of liquid insecticides in the Peet-Grady chamber. The present paper is concerned with the design

Figure 1

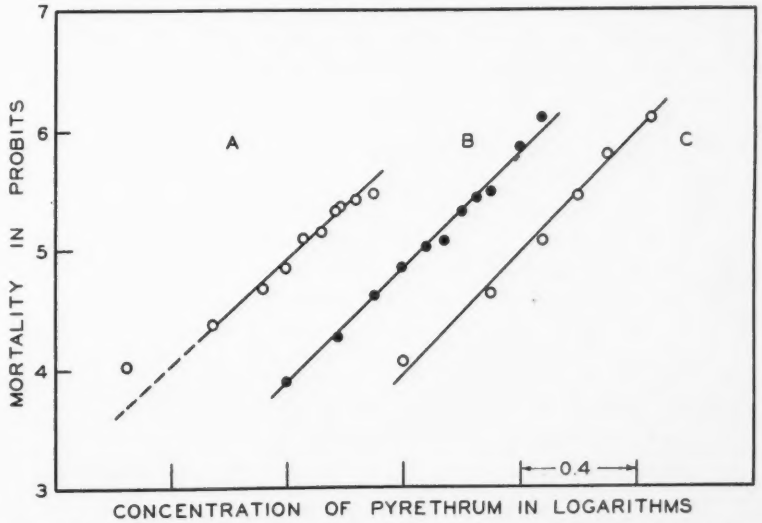

Fig. 1. Dosage-mortality curves for house flies in the Peet-Grady chamber: **A** from data of Hoyer, von Schmidt and Weed[5], **B** from data of Murray[8] and **C** from data of Miller and Simanton[6]. The scale of log-doses has been shifted horizontally for each curve to avoid overlapping.

of a bioassay that will meet the above requirement. This depends in large part upon experiments not yet performed but the necessary steps can be indicated from certain recent papers.

More concretely, our objective is to develop an efficient technique of bioassay which will show the amount of standard required to produce the same kill as a unit volume or mass of the sample or unknown and the precision with which this is estimated. If, for example, 0.5 unit of standard will kill as many flies as one unit of a given sample, the latter would be rated as having a toxicity of 0.5 or 50 per cent. If on the other hand 1.5 units of standard were to be as effective as one unit of another sample, the latter would be given a toxicity rating of 1.5 or 150 per cent. It is clear that ratings of this type would be directly comparable with those obtainable by chemical assay if suitable analytical methods were available. They would furnish a practicable basis for gauging the toxicity of competitive products and for measuring dosages. Successive batches of insecticide could be diluted or concentrated to a required toxicity with a minimum of testing and the probable limits of toxicity in the finished product would be known from the standard error. The objective of an improved assay, therefore, is not a theoretical rating beyond the grasp of the practical man as is sometimes claimed, even though the computations and underlying statistical theory may have an apparent complexity equal to that of many chemical analyses in everyday use.

Dosage-Mortality Curve

THE distinguishing characteristic of an improved bioassay is that it measures not only the relative response to equivalent doses of standard and unknown but also the relation between dosage and response within samples. In the Peet-Grady test the response is measured as percentage kill and the relation between dosage and mortality is termed the dosage-mortality curve. The dosage-mortality curve for different concentrations of pyrethrum with house flies in the Peet-Grady chamber has been determined in three different laboratories using large numbers of flies. In each case an unsymmetrical sigmoid curve was reported when percentage kill was plotted against the concentration of pyrethrum in the spray.

It is not easy to draw an asymmetrical sigmoid curve through a series of scattered points on a diagram and the resulting curves are not satisfactory for quantitative comparisons. A straight line, on the other hand, can be fitted more or less accurately by inspection or computed by relatively simple techniques. Statistical studies[1, 4] have shown that dosage-mortality curves can be plotted as straight lines by transforming the original dosage units to logarithms and the observed percentage kill to equivalent deviations of the normal curve of error. It is convenient to add five to these deviates to avoid negative numbers and they are then known as "probits." Tables are readily available[1, 3] with which percentages can be transformed directly to probits. This simple double transformation was first applied to the percentage mortality observed with different concentrations of pyrethrum in the Peet-Grady chamber by Murray[8] and it has proved equally effective with the data of other observers. By graphic test the plotted points agreed satisfactorily in every case with its line, as is evident from Fig. 1. These independently determined curves show an encouraging degree of parallelism, the slope or regression coefficient from the data of Hoyer, Schmidt and Weed[5] (curve A in Fig. 1) being $b = 2.24$, omitting the observation at the lowest dosage, from Murray's[8] data (curve B) being $b = 2.40$ and from data interpolated from the figures of Miller and Simanton[6] (curve C) $b = 2.52$. All three cases represented equal or nearly equal proportions of males and females.

Although these separate estimates of the relation between log-concentration and mortality in probits were of the same order of magnitude, each was based upon several smaller series which may have differed significantly in slope. This possibility can be determined only after the dosage-mortality curves for the individual cultures have been transformed to units which plot as straight lines. A comparison of slopes in terms of concentration and percentage kill has a very limited validity, for it disregards the sigmoid nature of the original curve, is restricted to a small fraction of the available evidence, and provides no estimate of error by which the significance of variations in slope can be judged. The percentage kills have been interpolated from Fig. 1 in the paper by Miller and Simanton[6] for seven individual curves and replotted in Fig. 2 in terms of logarithms and probits. All of them were in substantial agreement with the straight lines fitted individually by inspection, the separate series vary-

Figure 2

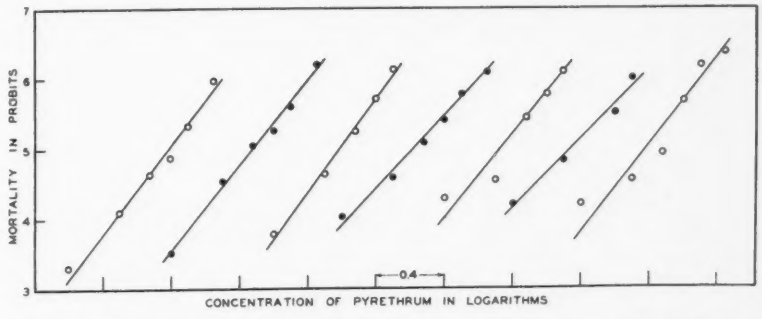

Fig. 2. A comparison of replicated dosage-mortality curves for different cultures of flies as reported by Miller and Simanton[6]. The scale of log-doses has been shifted horizontally for each curve to avoid overlapping.

ing in slope from b = 2.48 to b = 3.32 with an average of b = 2.95. The logarithm of the concentration killing 50 per cent (log-LD50) for each individual curve in this same series varied from 0.94 to 1.19 and averaged 1.02, a percentage variation in the log-dose killing 50 per cent about equal to that in slope. We may note that the average slope from which these variations in the log-LD50 were excluded was steeper than the slope of the curve based upon the average percentage kills from which they were not excluded, b = 2.95 as compared with 2.52, an increase in slope and precision which is to be expected when variations in the level of susceptibility are eliminated from the estimate of slope. These experiments show that the form of the dosage-mortality curve for the Peet-Grady test agrees quite adequately with that predicted theoretically, not only in the series reported by Murray[8], who has used the double transformation with marked success, but also in series obtained by others who have used only the original co-ordinates.

The above curves and slopes were determined from both males and females in equal or nearly equal proportions. Murray[7] has shown, however, that the two sexes differ markedly in their susceptibility. A comparison of the dosage killing 50 per cent of the males with that killing 50 per cent of the females as computed from separate curves for the two sexes in a later paper by Murray[8] showed that his sample of pyrethrum was 3.24 ± .03 times as toxic to males as to females. Since the curve was somewhat steeper for females at mortalities above 14 per cent kill than for males (b = 4.42 as compared with b = 3.26), the exact relation varied with the mortality. From the data of Miller and Simanton[6], their sample of pyrethrum showed 2.7 times as great a toxicity for males as for females. Because of this marked difference in susceptibility it is essential that the two sexes be equally balanced throughout any test in which the males are not separated from the females. Moreover the slope of the combined curve is flatter and requires more flies to obtain a given precision than if the sexes were handled separately. From Murray's data b = 2.40 when the sexes were combined as compared with b = 3.26 (males) and 4.42 (females above 15 per cent kill); from those of Miller and Simanton b = 2.52 for the combined curve and 3.22 and 3.62 for males and females respectively. The flatter slope of the curve combining both sexes has the practical effect of requiring 40 to 50 per cent more flies to determine the toxicity of a sample of pyrethrum spray with a precision equal to that obtainable with the smaller number when the results for the two sexes are recorded and computed separately. At the present time, however, it seems to be easier to increase the number of flies to this extent than to separate the sexes.

One other point of importance shown by both of the above series of experiments is that the slope of the rectified female curve decreased sharply below 15 per cent kill, a change in slope which has yet to be reported for male flies, probably because all of the concentrations have been large enough to kill more than 20 per cent of the males. This change did not seem to disturb the linearity of the combined curve in most cases, but it would seem a good precaution to avoid concentrations giving a combined mortality of less than 40 per cent (4.75 probits) in routine testing.

The dosage in these experiments has been varied by changing the concentration of pyrethrum and the objection has been raised that it is undesirable if not impossible to base a practicable bioassay upon any procedure requiring a change in the proportionate composition of the sample under test. This might be a serious restriction if the dosage could be varied only by diluting a given mixture, but dosage can be controlled in other ways, by varying the amount of liquid atomized into the chamber, the rate and manner of its discharge (whether continuously or in two or more lots separated by 5 or 10 second rest intervals) and to a lesser extent the duration of exposure. The exact technique, of course, must depend upon the results obtained by experiment.

For routine assays it would not be necessary to use five or more different dosages, as in the studies which have been reported or as may be necessary at first. Two doses of both standard and unknown should suffice. With two doses a convenient rule would be to adjust the smaller so that it would kill from 40 to 60 per cent of the flies and then to double this amount for the larger dose. If the slope of the dosage-mortality curve for different quantities of a single dilution were the same as that for different concentrations of the same quantity of insecticide, the larger dose should kill approximately 70 to 90 per cent. By using two (or more) dosages of both standard and unknown in each assay, one could determine the slope of the dosage-mortality curve for each particular assay and use it in computing the toxicity of the unknown from the mortality produced in comparison with the standard.

Avoiding Heterogeneity

FOR reliable results any method of bioassay must minimize differences in response attributable to factors other than differences in dosage or in relative toxicity. In estimating toxicity it is assumed that the four or more lots of flies in any one set have the same susceptibility except for chance variations due to sampling. With the original Peet-Grady technique this was far from true. Murray's experiments[7] showed that no method of sampling the flies in any one culture which depended upon the insects' own activity would give successive samples of equivalent susceptibility. Miller and Simanton[6] have solved this difficulty for practical assays by dividing a given culture into samples in the pupal stage. If all flies emerging from a given cage were released at one time in the Peet-Grady chamber,

the proportions of males and females and of different susceptibilities were the same in the separately-caged samples of a series. They have shown further[11] that the age differences introduced by this technique of from four to six days were of negligible importance. Thus a technique is now available for insuring comparable samples *within* any one culture of flies.

One fact, however, seems to have led to confusion and that is the indisputable and apparently uncontrollable difference between cultures even in the same laboratory. It has been contended that the percentage mortality for a given unknown or sample of insecticide should be determined for several cultures and averaged to obtain reliable estimates. This problem is familiar to the agricultural experimenter, who is also unable to control the extensive heterogeneity in his field tests but thanks to the methods of R. A. Fisher can design quite satisfactory experiments within this limitation. Applied here, the essential requirement would be to test both dosages of standard and unknown equally *within* the same culture and never to compare the mortality observed in a sample from one culture directly with the mortality obtained with a sample from another culture. In the terminology of a field experiment, each culture of flies would be equivalent to a complete block and each lot of flies, separated in the pupal stage from a thoroughly mixed culture, equivalent to a plot. The mortalities in the samples from any one culture, tested successively in a random order under uniform conditions, would comprise a self-contained series for computing toxicity which would be replicated until the required precision had been attained.

Even though the estimate of toxicity based upon a single culture of flies seemed precise enough, replication would still be advisable. Unforeseen sources of heterogeneity may appear when dosage is varied by altering the amount of liquid atomized into the chamber and there are probably biological factors yet to be standardized. Hence one should not depend exclusively upon the internal consistency of a single assay when certifying the toxicity of a given sample, at least not until he had shown experimentally that these checks were adequate. In short an assay should be repeated in toto upon a second or third culture and the toxicities computed independently from each of them. These should agree within the experimental error before the mean toxicity is certified.

Calculating Relative Toxicity

THE detailed computation of relative toxicity can be considered more advantageously elsewhere in conjunction with numerical data, so that only the general character of the calculations, none of them involved, need be indicated here. A basic assay consists, let us say, of tests upon the flies in four equivalent cages from a single culture, single and double dosages of standard and of unknown being administered successively in an order which is randomized separately for each assay. The four measurements of mortality are transformed to probits and each assigned a weight proportional to the information it contains as described elsewhere[1]. Between these four observations there are three degrees of freedom which can be identified with three essential terms for each assay. These are (1) the difference between the weighted mean response to the standard insecticide and that to the unknown, (2) the combined slope of the rectified dosage-mortality curve that best fits the response to both materials in each particular assay and (3) a term measuring the divergence from parallelism of the separate dosage-mortality curves for the two materials. The first two terms are used in computing the toxicity of the unknown relative to the standard and its error, while the third measures the internal validity of the particular assay. It is convenient to consider the latter first.

Whether the dosage-mortality curves for standard and for unknown are parallel within the experimental error and therefore comparable is measured by X^2_b as defined by Eq. 20 in reference[2]. If X^2_b does not exceed 3.84, which is the expected value of X^2 at the 5 per cent point for one degree of freedom, the two dosage-mortality curves presumably have the same slope, the unknown kills in the same way as the standard, and the toxicity of the unknown can be expressed adequately as a simple proportion of the standard. The assay then furnishes a basis for diluting or concentrating the sample to 100 per cent toxicity and an insecticide that has been so adjusted should produce essentially the same kill as the standard whenever they are used at the same dosages. But when X^2_b exceeds the limit of 3.84, the dosage-mortality curves for the two materials differ significantly in slope in the given assay. If the discrepancy should recur frequently, its interpretation would depend upon whether the slope for the standard insecticide were consistently larger or smaller than that for the unknown. In this case one would conclude that the two sprays differed in their mode of action, the one with the steeper slope being the more satisfactory insecticide, and a new standard should be adopted for routine assays which will have the same type of action as the unknown or sample. If, on the other hand, the discrepancy were significant and erratic, so that either the standard or the unknown might have the steeper slope in successive assays, it would indicate that the mortality in the four sets of flies comprising a complete test is subject to unrecognized sources of heterogeneity which need to be eliminated from the experimental technique for satisfactory results. With 500 flies on each dose and an average slope of $b = 2.9$, based on the experiments cited above, the slope of the separate curves for the standard and the unknown could differ by as much as 25 per cent and still be equal within the experimental error of the modified Peet-Grady test.

When both materials show essentially the same increase in mortality in probits per unit increase in

log-dose as judged by a X^2_b of less than 3.84, a combined slope is computed from the estimates for the two materials by Eq. 18 in reference[2]. This represents the toxicological relation existing in a particular culture of flies at the time of the assay and is the logical value for transforming a difference in the average response to M, the log-ratio of toxicities in terms of dosage units. Since the variability *between* cultures, either in overall susceptibility or in the slope of the dosage-mortality curve, cannot bias the estimate of relative toxicity determined wholly from *within* a culture, the estimates of toxicity for a given sample of insecticide should agree within the experimental error in successive assays and in different laboratories. Although computed in terms of logarithms as the log-ratio of potencies, M, which was defined originally by Gaddum,[4] the antilogarithm of M measures directly the toxicity of the unknown relative to the standard and is multiplied by 100 for percentage terms. A sample having a toxicity of 1.5, for example, would carry a rating of 150 per cent relative to a 100 per cent official standard. All fly sprays having quantitatively the same mode of action as the standard could be classified on a similar scale.

Although the log-ratio of potencies or toxicities is the best estimate that can be computed from a given assay, it does not pretend to absolute accuracy. Its significance depends upon the magnitude of its standard error, s_m. The computation of s_m is based upon Eq. 30 in reference[2], which can be simplified algebraically in the present case. In terms of logarithms the result of a given bioassay is measured by $M \pm s_m$ and statistical tests to determine whether the toxicity of a particular sample differs significantly from that of the standard are made directly from these logarithmic values. When the ratio $\frac{M}{s_m}$ is less than 1.96, disregarding the sign of M (whether + or —), the toxicity of the sample or unknown does not differ significantly from that of the standard. When this ratio exceeds 1.96, the sample is judged to be more or less toxic than the standard depending upon whether M is a positive or a negative quantity.

What precision is to be expected from a single assay conducted as outlined above? Assuming the same slope as before ($b_c = 2.9$) with 500 flies at each of the four doses, the expected precision is in the neighborhood of ± 7 per cent when the unknown does not differ significantly from the standard. Since this is in terms of the standard error, one could recognize a sample which differed by 15 per cent in toxicity from the standard insecticide. Even though this precision might be adequate for many purposes, it is preferable to repeat the assay a second or third time. The successive independent determinations of M should all agree within the limits of their sampling errors, a requirement which is quite equivalent to the agreement demanded between duplicate or triplicate chemical analyses. In combining these estimates of M, each should be weighted by the information it contains, which is equal numerically to $\frac{1}{s_m^2}$. A weighted mean M based upon two separate determinations each having an error of 7 per cent would have a combined error of about 4 per cent, while the addition of a third would reduce the standard error still further. Thus it is a simple matter to increase the precision of a consistent technique of bioassay to any required level by a suitable increase in the number of separate determinations.

Summary

A review of recent studies on measuring the toxicity of fly sprays with the Peet-Grady chamber indicates how this bioassay can be developed further for quantitative determinations of toxicity in terms of the official test insecticide or its equivalent.

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Extract of Derris

Microscopic examination was made of 25 samples of derris root and two samples of *Longocarpus* root. A direct correspondence was established between the content of ether-extractable substances and the intensity of the following reactions: The color reaction of Jones and Smith, the amount of material which can be extracted by water in the form of a white powder, the glassy appearance in Venetian turpentine of surfaces of the root in cross section, and an inverse relation between the ether-extractable substances and the reaction with iodine in potassium iodide solution. There is no relation between the rotenone content and these reactions. By means of the microcopic reactions described it is not possible to distinguish between derris root of the *elliptica* type with much rotenone and relatively little ether extract and the *malaccensis* type with little rotenone and much ether-extractable material. The reactions of samples of *Longocarpus* root do not differ from those of derris root in spite of a large amount of ether-extractable material. A. Diakonoff and C. M. L. Smulders. *Pharm. Weekblad* **75**, 1097-1107.

Insecticide Specifications

The State of Wisconsin Issues Four New Tentative Specifications for Insecticides and Rodenticides

AN interesting feature of the tentative specifications recently drawn up by the State of Wisconsin for insecticides and rodenticides, is a provision whereby, if at any time during the period of contract the insecticide being shipped is unsatisfactory, the contractor will be liable for the cost of a laboratory examination. This provision appears in Wisconsin Specification No. 104—*Insect Powder* (non-poisonous) and No. 103—*Pyrethrum-fluoride Insecticide*. Another feature of note, in Specification No. 103, is the requirement of sodium fluoride in the form of a white powder. This is of course not in accord with other recent specifications, which require a nile-blue powder. Still another specification may be commented upon; that being Specification No. 100-102—*Domestic Fly-Cattle-Crawling Insect Spray*, in which no synthetic, nor booster of any kind is allowed. Following is a resume of the various specifications proposed:

Insect Powder (non-poisonous)—Wis. Spec. No. 104—These insect powders, according to the tentative specifications, shall be non-poisonous products for use in kitchens, pantries, dining halls, living quarters, or other places where the use of a non-poisonous insecticide is desirable, in the control of roaches, silverfish, spiders or similar crawling insects. It shall be of two types; Type "A" — powdered pyrethrum flowers and Type "B" — powdered mixture of pyrethrum flowers and rotenone bearing plant material, each type being of one grade and packaged in a strong container of any size.

The pyrethrum powder used in the two types shall be a product resulting from the reduction to an impalpable powder of the flower heads of chrysanthemum (pyrethrum) cinerariaefolium, and free from added stems or other adulterants. It shall be made of flowers that have been properly harvested and cured so as to retain maximum insecticidal efficiency and are free from mold, and shall have the characteristic color and odor, and assay .9 per cent pyrethrins when assayed by the Seil Modification of the Tattersfield Method.

The rotenone bearing plant material shall be either derris root or cube and shall be reduced to a fine powder that will mix well with the pyrethrum powder. Type "B" powdered mixture shall contain at least one-half of one per cent pure rotenone when assayed by the method worked out by the U. S. Food and Drug Administration. Type "B" shall also contain approximately ninety per cent of powdered pyrethrum flowers assaying .9 per cent pyrethrins.

The bidder must submit a certified laboratory report showing the pyrethrin contents of the pyrethrum powder used and the rotenone content of Type "B" powder. If at any time during the period of contract the powders being shipped are unsatisfactory, the contractor will be liable for the cost of a laboratory examination made on a sample of the powders by a reputable qualified laboratory.

Unless otherwise specified in the contract, this insect powder shall be packed in tight cans or cartons, each one being so constructed as to permit closing to preserve the contents. Each individual can of this powder shall be marked with the quantity contained therein, the name of the material, the name of the manufacturer, packer or distributor and ingredient statement in accordance with the requirements of the Insecticide Act of 1910.

Domestic Fly-Cattle-Crawling Insect Spray—Wis. Spec. No. 100-102—is defined as a non-poisonous and non-staining liquid for use in kitchens, pantries, dining halls, dairy barns, on and over cattle, milk rooms, laundries and other places where the use of a non-poisonous insecticide is desirable in the control of flies, fleas, mosquitoes, spiders, roaches, bed bugs, and similar insects. The tentative specification covers but one type and one grade in five gallon cans and fifty-five gallon drums. Basically, this insecticide shall be a compound of odorless petroleum distillate and pyrethrum. Perfuming agents to mask the musty odor of pyrethrum must be present but no rotenone, no chlorinated hydrocarbon, no synthetic such as thiocyanates or isobutyl undecylenamide, nor boosters of any kind will be allowed. The insecticide shall be non-poisonous to man and domestic animals when used in the customary manner, non-explosive and shall not corrode metals, neither shall it taint food or milk when used in the customary manner. It shall also be non-irritating.

The petroleum distillate, according to the proposed legislation, shall have the following characteristics: a baume gravity of 41-48.5; flash point minimum of 120° F. (Tag. closed cup); initial boiling point, 340° F. minimum; end boiling point, 520° F. maximum; sulphur, 0.05; corrosion test on copper strip must be negative; color (saybolt) must be

over 21, and saybolt viscosity, 100° F. must be between 30 and 35. The distillate must also be water white and practically free from kerosene odor and taste.

The pyrethrum shall be made from the flower heads of pyrethrum chrysanthemum cinerariaefolium, or a standardized concentrated extract of the same and shall be present in the amount of three pounds of pyrethrum per gallon of the finished spray.

Inspection of the insecticide will be made either at place of manufacture or after delivery at the option of the state. The killing test shall be made by the Peet-Grady method in its current form as approved by the National Association of Insecticide and Disinfectant Manufacturers and reported in comparison with the N.A.I.&D.M. official test liquid run at the same time. This insecticide, when diluted one part insecticide with two parts of highly refined oil shall kill no fewer flies in twenty-four hours than +6 over the official test insecticide.

The state reserves the right to use a portion of any delivery before results of tests are available, without prejudice to any final adjustment which may be made. This provision shall not operate to prohibit the state from rejecting the unused portion of the delivery, reserving the right to pay for, or not to pay for the used portion, depending upon the merits of the case.

Powdered and Liquid Extract of Red Squills—Wis. Spec. No. 105—These two types, Type "A"—powdered red squill and Type "B"—liquid extract of red squill, will be used in rodent control and mixed with meat, fish, fruits, and similar baits, each type being of one grade. The red squill shall be oven dried squill (urginea maritima) (scilla) powdered, standardized, and physiologically tested. It and its extract shall be suitable for the purpose intended.

The powder must be of the commercially known "one and three-fourth grain" strength. Not more than one and three-fourth grains of the material are required to kill a pound body-weight of rat within five days as per physiological test developed by the U. S. Dept. of Agriculture.

The liquid extract shall be made of such strength that one fluid ounce will be equivalent to one ounce of the powdered one and three-fourth grain red squill when tested physiologically against rats as per the above test.

Each bidder must submit certified copies of laboratory reports showing the products they propose to furnish have been tested physiologically and the results obtained. Unless otherwise specified in the contract, the powdered squill shall be packed in 25-lb. drums, 10-lb. tins, 5-lb. tins. The liquid extract of red squill must be packed in 30-gal. drums, 5-gal. drums, 1-gal. cans.

Pyrethrum - Fluoride Insecticide—Wis. Spec. No. 103—is to be used as a poisonous powder for use in kitchens, pantries, dining halls, living quarters or other places where the use of a posionous insecticide can be used to control roaches, silverfish, or other crawling insects, without contaminating food products and where it will be used with cautious methods of treatment. The proposed specification covers but one type and grade, but in any size package. The general and detail requirements for the pyrethrum powder, contained in this insecticide, are the same as those given above for the pyrethrum powder in the non-poisonous insect powder.

This insecticide shall be at least one third (1/3) part by weight of powdered pyrethrum flowers and two thirds (2/3) sodium fluoride. The fluoride content must be from a good grade commercial sodium fluoride in the form of a uniform, fine, dry, white powder, suitable for dusting, free from lumps and gritty material. The sodium fluoride used as an ingredient shall contain not less than ninety per cent of sodium fluoride, Na F, the remaining ten per cent to consist of the usual impurities in a good grade of commercial sodium fluoride, such as sodium silicofluoride, sodium bifluoride, sodium carbonate, etc. The two ingredients, pyrethrum powder and sodium fluoride, shall be well mixed and capable of being used in dusting.

Bidders must submit a certified laboratory report showing the pyrethrin contents of the pyrethrum powder used and the percentage of sodium fluoride powder (commercial 90 per cent grade) used in the admixture. If at any time during the period of contract the powder being shipped is unsatisfactory the contractor will be liable to the cost of a laboratory examination made on a sample of the powder by a reputable qualified laboratory. Each individual can of pyrethrum-fluoride must be marked with the word "Poison."

◆

Bleaching Carnauba Wax

Carnauba wax can be bleached without altering its properties by treatment with an alkaline metal in the presence of hot alcohol. The crude wax is dissolved in a liquid such as butyl alcohol and then sodium is added. The hydrogen produced, preferably under pressure, has a strong bleaching action. Action is complete in about an hour at 15 atmospheres. Agitation is continued at normal pressure untill all of the sodium has disappeared. The butyl alcohol is distilled off and the wax washed with water and with acid. This treatment gives a product of very light color. Deutsche Hydrierwerke. Berman Patent No. 658.749.

◆

Cleaner and Disinfectant

Liquid cleaning agents which also have disinfecting properties consist of an aqueous solution of potassium silicate and potassium hypochlorite, the active chlorine being present in at least the amount of 70 grams per liter. I. G. Farbenind. A.-G. French Patent No. 825.178.

◆

Liquid Insecticide

An insecticidal composition contains a diaryl substituted guanidine, pyrethrum extract and a fatty acid, in solution in a nonaqueous solvent. Am. Cyanamid & Chem. Co. Canadian Patent No. 379.864.

Technical Notes

Creosote Emulsion

A base for creosote-oil emulsion is made by adding two parts of rosin soap low in water, one part of creosote oil. The latter is added portionwise with careful mixing. When the whole of the oil has been incorporated, a thick, jet-black, flowing mass having an extremely fine body is obtained. This black fluid gives a white emulsion with water. The base will keep its black color but become creamier in consistency if up to 10 parts of water are worked into it. In this way a base with varying water content, and corresponding price variations, can be prepared. T. R. Sachdev. *Indian Soap J.* **5,** 81-3 (1938).

Rotenone Determination

A volumetric step in the determination of rotenone affects a saving in time of from 6 hours to 1 day. The method has been adapted to determining the purity of the crude carbon tetrachloride solvate obtained in the gravimetric crystallization method. The extraction of the root sample and crystallization from carbon tetrachloride at 0°C. are carried out by the known Jones and Graham method.

The carbon tetrachloride solvate obtained in this way is filtered and washed by suction as usual. Then, without further drying, it is dissolved in about 25 cc. of acetone in a 250 cc. flask. This is readily accomplished by placing the crucible in a funnel and washing the contents through into the flask with small lots of acetone. The solvent is evaporated completely on the steam bath. The residue is treated with 10 cc. of 80 per cent (by volume) dichloracetic acid and warmed gently until the residue just dissolves. The solution is then cooled in an ice bath for a few minutes, 10 cc. of cold water are added slowly with swirling, a few seed crystals of rotenone-dichloracetic acid solvate are added, and the flask is again cooled in the ice bath for 2-3 minutes. Separation of a few small needle crystals will usually be noted at this point. If not, water is added a drop or two at a time, with intermittent cooling, until a few crystals are noted.

Water is then added 10 to 15 drops at a time, with about 1 minute's cooling between additions, until 25 cc. have been added, then 25 cc. more are added dropwise and the solution is again cooled, and finally 50 cc. are added more rapidly and the solution is again cooled. The material is filtered through a Gooch crucible, with filter paper, and washed with about 250 cc. of water in small portions. The outside of the crucible is rinsed with water and the contents are dissolved in 25 cc. of chloroform. This solution may be accomplished by placing the crucible and contents in a beaker, adding the chloroform, and leaving the crucible in the beaker during the titration. To the chloroform solution 50 cc. of freshly boiled water are added, and the mixture is titrated with 0.1 *N* alkali, with phenolphthalein as indicator. The mixture must be thoroughly agitated, particularly near the end point, to ensure that all the acid is extracted from the chloroform layer.

Each cc. of 0.1 *N* alkali is equivalent to 39.4 mg. of rotenone. A blank should be run on the chloroform used. The usual allowances for added rotenone and for its solubility in carbon tetrachloride, 0.07 gram in 25 cc., are made.

An advantage of the method is that neutral insoluble materials present with the carbon-tetrachloride solvate, in no way interfere with the determination, as they do in the gravimetric method using the alcohol recovery test. Insecticidal dusts containing sulfur, which is frequently mixed with derris or cube, may be analyzed by this method without interference from the sulfur. Howard A. Jones. *Ind. Eng. Chem.*, Anal. Ed. **10,** 684-5 (1938).

Chromium Polish

Chromium polish may be made (a) from 20 parts by weight of olein and 60 of stearin. These are melted together and to the melt are added 20-30 parts of precipitated calcium carbonate. The mass is allowed to cool and is then ground. (b) Melt 10 parts by weight of carnauba wax, 15 of yellow beeswax, 15 of Japan wax and 60 of paraffin melting at 46-48°C. Remove from the fire and mix with 130 parts by weight of turpentine oil or its substitute. Into mixture stir 70 parts by weight of dried but washed tripoli, then another 100 parts of turpentine oil until the mass sets to a solid. (c) Mix well 50 parts by weight of precipitated iron oxide, prepared from ferrous oxalate, 100 parts of white kieselguhr, 150 of Neuburger chalk and 700 parts of coconut-oil soap. *Seifensieder-Ztg.* **65,** 766 (1938).

Succinic Acid Products

Succinic acids substituted in one of the CH_2 groups by a hydrocarbon residue containing at least five carbon atoms, are caused to react with nitrogen compounds containing at least one hydrogen atom combined with a nitrogen atom. Amides or imides are obtained. Products containing at least one acid group are particularly suitable as capillary active agents and soap substitutes. I. G. Farbenindustrie A.-G. British Patent No. 478,308.

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MOTORMATIC Electric SPRAYER

Designed for thorough pest annihilation . . . and at a saving of time, labor and money. Requires no preliminary preparations. Does not waste a drop of fluid. Gives Insecticide finest possible diffusion and longest possible floating suspension Automatic shut-off. Operates simply and easily on any current. Heavy duty durable construction.

Write Today for Complete Details, Prices and Descriptive Literature.

STEAMASTER EXTERMINATOR

With steam serving both as an ingredient and as a force, the insecticide itself is held in moist suspension and the attack is made at full strength . . . thus guaranteeing a 100% thorough job of pest extermination. Completely enclosed heating element. Operates from any electric outlet. No fire hazard. Current shuts off automatically when water level drops below the level of the heating element.

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The Perfect Twins

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IDEAL MOTHPROOFING COMPOUND	TESTED BED-BUG CONCENTRATE
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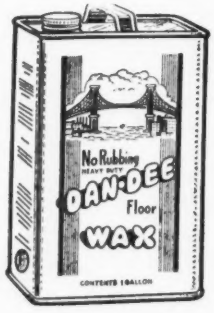

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Specially priced for jobbing trade
Private labels supplied

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News.....

New Sanitary Supply Firm

Charles S. Buschart, who was formerly associated with the National Sanitary Co., St. Louis for sixteen years as secretary and treasurer, has now started a business of his own under the name of the U-San-O Corp., at 1808 Chouteau Avenue, St. Louis. He is manufacturing a complete line of janitors' and cleaning supplies, as well as disinfectants, insecticides, etc. The U-San-O name is an old recognized trade mark, and Mr. Buschart merely bought out the name to operate his own business.

Leavitt with Haag Laboratories

L. M. Leavitt has recently joined the sales staff of Haag Laboratories, Chicago soap and sanitary products manufacturer. Mr. Leavitt will specialize in building up the sales of the hospital department.

Furst-McNess Elects Furst

C. W. Furst, who has been serving as treasurer of Furst-McNess Co., Freeport, Ill., insecticides, was elected president of the firm at the recent annual stockholders' meeting. He succeeds H. A. Hillmer, who was named chairman of the board. Other officers elected were Arthur Rasmussen, vice-president and A. B. Mattert, secretary.

Dreyfus With West 40 Years

Dr. William Dreyfus, chief chemist of West Disinfecting Co., Long Island City, N. Y., celebrated his fortieth anniversary with the company on April 1st. Dr. Dreyfus was born in Switzerland on June 17, 1869. He received his education there, studying at the Universities of Zurich and Geneva and graduating with the degree of Doctor of Science in April, 1894.

Dr. Dreyfus' first practical experience as a chemist was with the Swiss Chemical Fertilizer Works in 1894. Later he entered the coal tar distillation industry in England with Forbes, Abbott and Lenard. On April 1st, 1899 he accepted a position as

Dr. William Dreyfus

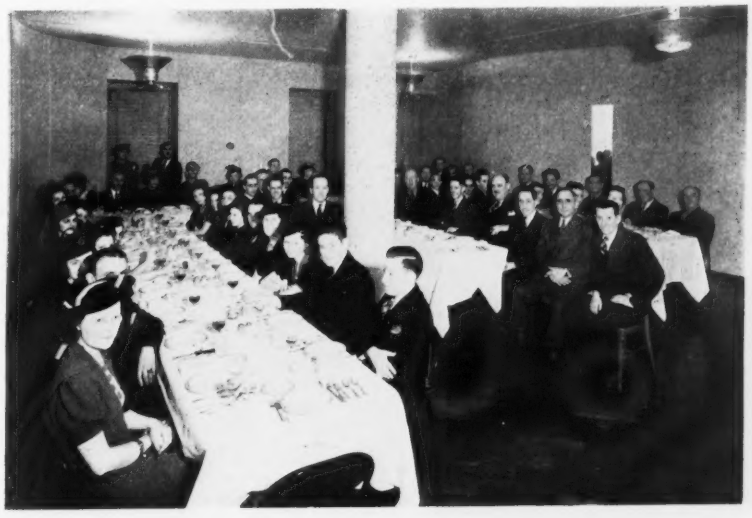
director of the chemical laboratories of West Disinfecting Co., arriving in New York, April 15th, 1899. Among his outstanding achievements has been his activity as the father of disinfectant standardization in the United States. It was chiefly through his efforts that the industry adopted the Hygienic Laboratory Method of testing disinfectants, recently supplanted by the F. D. A. Method.

Dr. Dreyfus is well known in chemical circles, and is considered an authority on disinfectants and sanitation. He was for a great many years chairman of the standardization committee of the Natl. Assn. of Insecticide and Disinfectant Manufacturers. He is a member of the American Chemical Society, the Society of Chemical Industry, the American Electrochemical Society, the Chemists Club, and was for some time the President of the New York Swiss Club.

New Packages for Barrett

Barrett Co., New York, is now packaging its "Polar" brand moth balls and flakes in new cellophane containers. The containers are brilliantly printed in strong red and blue colors and show up well with the white product as a background. The company states that the cellophane container has been found more effective in imprisoning the naphthalene odor, where the odor might be objectionable, i.e., where the product is handled along with foodstuffs. The company will also continue to offer naphthalene products in boxes.

Employees of Fuld Brothers, Baltimore, recently enjoyed an evening of entertainment at the Stafford Hotel, Baltimore, in celebration of the company's fulfillment of sales and production quotas for 1938. The dinner was the climax of the four-day spring sales conference in Baltimore of the nationwide sales organization of Fuld Brothers.



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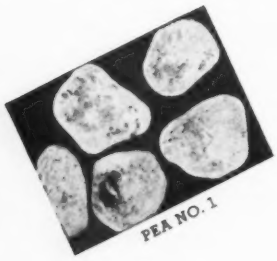
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for

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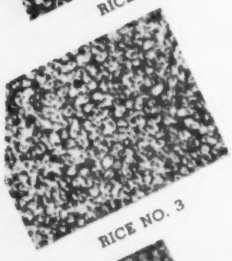
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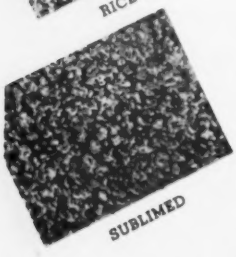
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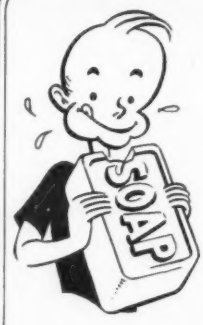

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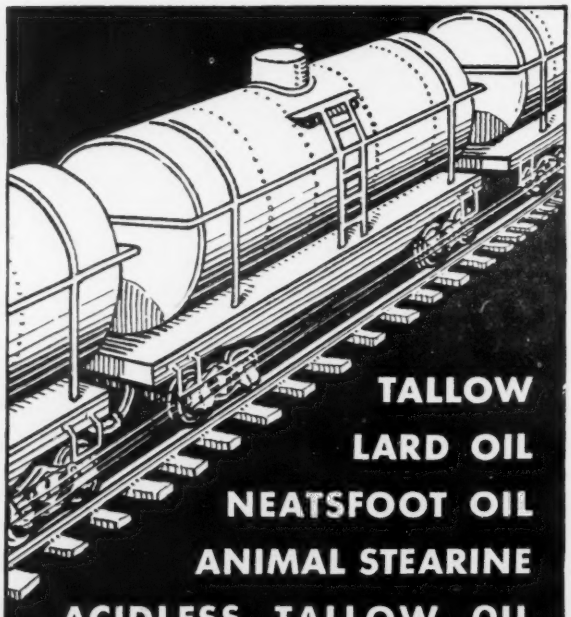

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LARD OIL
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ANIMAL STEARINE
ACIDLESS TALLOW OIL

Prompt Delivery—Drums, Barrels, or Tank Cars.

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Pyrethrum Imports Lower

United States imports of crude pyrethrum decreased sharply in 1938 to 14,537,000 pounds from the record amount of 20,000,000 pounds imported in 1937, according to the Bureau of Foreign and Domestic Commerce. Of the amount imported last year, Japan supplied 10,895,000 pounds valued at $1,781,000 compared with 17,850,000 pounds valued at $1,995,000 in 1937. Imports from Kenya increased from 1,423,000 pounds in 1937 to 2,864,000 pounds in 1938, and Brazil's contribution increased from only 661 pounds in 1937 to 497,000 pounds in 1938. Other countries from which imports of pyrethrum were received included Italy with 28,500 pounds; the United Kingdom, 33,600 pounds; and Yugoslavia, 214,400 pounds.

Paraklenze Trade Mark

SOAP wishes to make a correction in the spelling of the trade mark which it published last month as Parallenze. The correct spelling of the trade mark, which describes a glass cleaner, is "Paraklenze" and was filed by Paragon Oil Co., Brooklyn, Nov. 14, 1938. They claim use since Nov. 1, 1938.

Gair Appoints Callaghan

Wray H. Callaghan has recently been appointed sales manager of the folding carton division of Robert Gair Co., New York. He has been with the company 23 years, during which time he had varied experience in the company's activities. More recently he has been directly identified with the folding carton division.

Pioneeer Chemical Expands

Pioneer Chemical Co., insecticides and disinfectants, Los Angeles, has recently come under the control of J. T. Silver who bought out the assets of N. S. Hillman. The company plans to add a complete line of package goods to its products, as well as insecticides and disinfectants, to be sold to the retail trade in conjunction with its present set-up of selling to institutions. In connection with this; F. W. Johnson has been put in charge of the package goods department, and P. W. Lamport in charge of advertising.

DEAD-SHOT Weirich they calls him up in the hills near Squaw Gulch, N. H. When his trusty shootin-iron speaks, it's venison for dinner, boys! In private life, this intrepid hunter is none other than Clarence Weirich, general manager of the C. B. Dolge Co. of Westport, Conn., and member of the Board of Governors of the National Assn. of Insecticide & Disinfectant Manufacturers. It seems that the aforementioned venison was slaughtered along back in December, but we just succeeded in getting this action shot. Note the snappy sport togs, used for both golf and hunting by the landed gentry in and around Squaw Gulch. Mr. Weirich insists that those are not powder burns on the ear of the middle buck, rumored shot at close range.

New Fuld Drip Machines

Fuld Bros., Baltimore, have announced the addition of new drip machines and deodorant block holders to their line of products. They state that the appliances work on an entirely new principle, for which there is a patent pending, of evaporation of paradichlorobenzene and drip fluids. The containers work on a chimney principle and are modernistic in design and construction. They will not be under full production until April 15.

Zonite Earnings Down

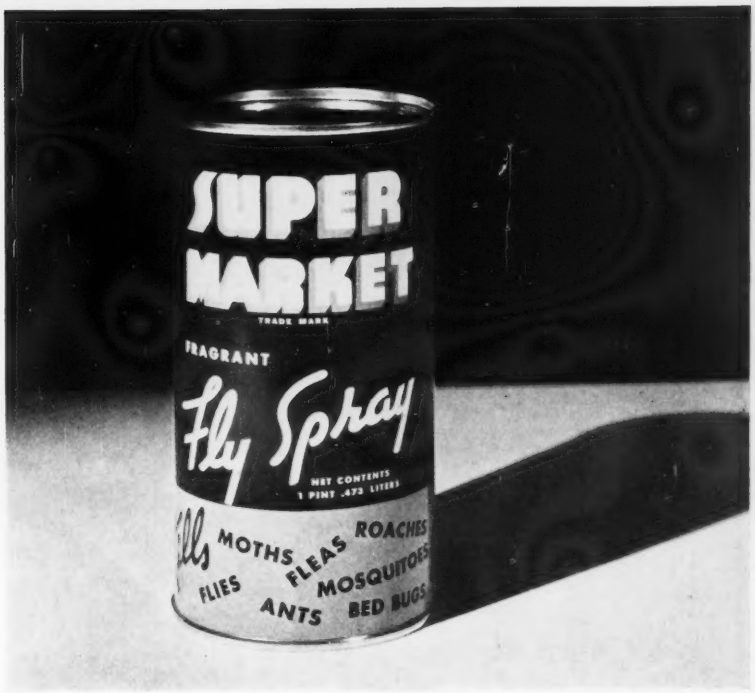
Zonite Products Corp., New Brunswick, N. J., reported a net profit of $49,916 for 1938, equal to six cents each on 825,656 shares of $1 par value stock. This compared with a net profit in 1937 of $142,365 or 17 cents a share.

Review Hess & Clark History

"Lean Years Forced Us to Improve Our Goods and Methods" is the title of an interesting article appearing in the March issue of *American Business*. It is by J. L. Clark, founder and president, Dr. Hess and Clark, Inc., Ashland, O., stock sprays, cattle dips, farm insecticides and general barnyard remedies, and as the title implies, covers in detail the efforts the company made to improve its goods and methods during the lean years of business. Some firms, seeing their sales drop off with the advent of the depression, might have hunted up new dealers, opened up new territory, and high-pressured distributors. Dr. Hess and Clark, however, did no such thing. Instead, they spent the time during this period scrutinizing their line and searching for undiscovered angles, the article states. They tested their products anew in their own laboratory and on their research farm, a real farm of over two hundred acres, they proved what they had been telling farmers was true, and learned some things further.

"Of course," Mr. Clark explains, "you might discover a marvelous new way of ridding all farm animals of worms and lice and such. But when you have devised your product, it's another thing to produce it at a price your farm customers can afford to pay. Fly-spray, for instance, has to be powerful enough to kill flies, and yet cheap enough that the farmer will use it all through his cow barns. When you talk to a farmer about ridding hens of lice and worms and other parasites, you need to talk in terms of a bird often worth not over fifty cents. You've got to know your pennies when talking to farmers."

Not only did the company intensify its research, but also the direct marketing of its products. Radio time was bought and a program of interest presented to the farmer; sales approach was modernized; labels redesigned, and packaging brought up to date.



New Bomex Toilet Appliance

Bomex Products Co., Buffalo, has recently patented a toilet bowl chemical cake holder made of white porcelain and having a stainless steel wire hanger covered with white surgical rubber tubing. The holder is not now commercially available as the company is offering the patent for sale.

New Baldwin Fly Spray

Baldwin Laboratories, Inc., Saegertown, Pa., have recently announced a new "Super Market Fly Spray." Although selling at a low price, the manufacturers state that in meeting price competition they have not sacrificed quality, for the new product has a Grade A kill. It is marketed in a full pint size can of the puncture type, attractively lithographed in three colors, and may be stocked readily for pyramid displays.

Rotenone Imports Increase

Imports of derris, cube, timbo and barbasco into the United States exceeded 3,000,000 pounds valued at $382,000 in 1938 compared with 2,413,000 pounds valued at $343,000 in 1937 and 2,340,000 pounds valued at $323,500 in 1936, according to latest reports received from the U. S. Department of Commerce. Imports of derris root aggregated 743,000 pounds, while imports of cube, timbo and barbasco aggregated 2,327,000 pounds.

Quick Shine Discontinues

Quick Shine Products Co., 23 West 55th Street, New York, has recently discontinued activities.

The new spring window display of the Bee Brand line of insecticides of McCormick & Co., Baltimore, comprising insect spray and insect powder, and a display card showing the common household insects. This is a view of the window in the McCormick Model Store, located on the executive office floor of the McCormick Building in Baltimore.

Exhibit at Flower Show

Several firms in the sanitary chemical field exhibited at the recent 26th Annual Flower Show at the Grand Central Palace, New York. Among them were Sanders-Durling Entomological Service and Guarantee Exterminating Co., both of New York, offering termite control service; Nott Manufacturing Co., New York, with a display of various insecticides; Andrew Wilson, Springfield, N. J., displaying both sprays and powders, and Rose Manufacturing Co., Philadelphia, with a display of insect sprays.

N. Y. Exterminators Meet

The Associated Exterminators & Fumigators of New York held a dinner meeting March 14, at the Cafe Loyale. Dr. I. Schwartz, chief chemist of Bendiner & Schlesinger, who was the speaker, gave many case histories of alleged acts of carelessness, etc., attributed to exterminators, but for which the industry was not to blame. President Buettner, who had just returned from a two months' trip throughout the United States, related many facts of interest regarding the Pest Control Conferences which he attended and regarding developments in the industry in other parts of the country. He also gave an interesting discussion on unethical advertising and too much selling of "price" rather than services. L. A. Murray, New York City Better Business Bureau, also spoke on services offered by this bureau.

Chicago P.C.O. Meet

Chicago pest control operators recently held a luncheon meeting at the Medinah Club, to welcome "Bill" Buettner. The secretary of The National Assn. of Pest Control Operators gave a talk on advertising, explaining the code being sponsored by the Los Angeles Better Business Bureau.

Canadian Wax Output Expands

Total production of Canadian establishments manufacturing floor wax and polishes of all kinds in 1937 amounted to a value of $2,736,269 as compared with $2,481,044 in 1936, according to a recent report by the Dominion Bureau of Statistics. Seventy per cent of the total output was produced in plants located in Ontario, which has 28 of Canada's 46 establishments producing this class of products. Those items having the highest value in 1937 were paste floor wax worth $759,895 and liquid floor wax and floor polishes, worth $459,612.

Wind-O-Kleen Agent

Home Dry Cleaner Laboratories, Uniontown, Pa., maker of "Wind-O-Kleen," has appointed Albert P. Hill Co., Pittsburgh, to handle its account. The advertising schedule calls for the use of newspapers, radio and direct mail.

Dow Appoints Welles

Dow Chemical Co., Midland, Mich., has recently appointed George D. Welles, Jr., as advertising manager. He succeeds W. F. Stumpfig, who has been assigned to the sales department of the company located in the Midland office. Mr. Welles joined the Dow organization in 1937, as editor of the *Dow Diamond*, bimonthly company magazine, and of *Spot News*, a monthly publication prepared for circulation in the dry cleaning industry. Prior to that he was a staff columnist on the *Toledo News Bee* and with the publicity department of the Sun Advertising Co., Toledo.

Open New Penick Plant

S. B. Penick & Co., New York, have recently extended an invitation to all their customers to visit the company's new insecticide concentrate plant at Lyndhurst, N. J. The manufacturing facilities for "Pyrefume," they state include the most modern equipment, augmented by a well-trained staff. A circular containing the invitation, also shows pictures of various parts of the plant.

World's Fair Exterminating

Within the past month there have been changes in the general exterminating contract for the New York World's Fair. On March 4th, an arrangement with Exterminating Services Corp. was cancelled. It is reported that the reason for the cancellation was publicity to which the World's Fair authorities objected. New invitations to bid were offered, and on March 23rd, the Mahler Exterminating Co. of New York began work on buildings owned and operated by the Fair. In the March issue of *Soap*, an incorrect statement was made as to what constituted "approved" concerns. We are pleased to make correction. Originally and prior to issuance of any invitations to bid, the World's Fair Corporation submitted a questionnaire or request asking a group of firms to provide some history about themselves and other vital statistics as to responsibility, insurance, etc. Eight firms chose to submit this data and subsequently were given invitations to bid. This should not be construed as meaning that only these firms will be permitted to do work on the Fair grounds as concessionaires may order individual work to be done. Firms that are privately employed must, however, comply with regulations as determined by the Fair authorities.

New Beacon Synthetic Waxes

Beacon Co., manufacturing chemists, Boston, has recently developed two new synthetic waxes known as "Carnaqua" waxes. They state that the new waxes have much the character of carnauba wax in addition to being self-emulsifying. When the new wax emulsion is modified by certain synthetic resin solutions, they say, a material results which is absolutely water-proof, very durable, very glossy and self-leveling. Literature is available upon request.

Buy Interstate Chemical

George F. Smith, vice-president of Phillip Bros., and Harold T. Moore, president of Allegheny Chemical Co., have recently purchased Interstate Chemical Manufacturing Co., Jersey City. Established many years ago, the company produces a varied line of products chiefly in the insecticide field. Outstanding among its products are a rotenone powder "Bug Death," and tobacco dust.

Wants Insecticide Agency

A firm in Tel-Aviv, Palestine, would like to establish an agency for the sale of American made insecticides and disinfectants. Further information may be obtained by writing to the United States Bureau of Foreign and Domestic Commerce, referring to File No. 1025.

Evaluation of Germicides

(*From Page* 101)

oil, straight line curves may be obtained. It thus becomes possible to extrapolate for the theoretical phenol coefficient, which would be given had no sulphonated oil been used, or were solution in water possible. Credit is due to Carswell and Doubly[11] for the foregoing method for estimating phenol coefficient values.

Sufficient evidence has been presented to indicate that research concerning the evaluation of germicides and antiseptics has not become stagnant. There is still, however, much need for research in this field, and especially for standardization of procedures. Although the final testing of a germicide for use in contact with body tissues should be carried out under clinical conditions, a large amount of valuable information may and should emanate from the laboratory. By careful research and cooperation on the part of both the laboratory worker and the physician, the highest degree of efficiency in the evaluation of germicides and antiseptics may be obtained.

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[10]Reddish, G. F., and Burlingame, E., A Laboratory View of Athlete's Foot. Druggists Circular, June 1938.

[11]Carswell, T. S., and Doubly, J. A., Germicidal Action of Benzylphenols. Ind. & Eng. Chem. 28:1276:1936.

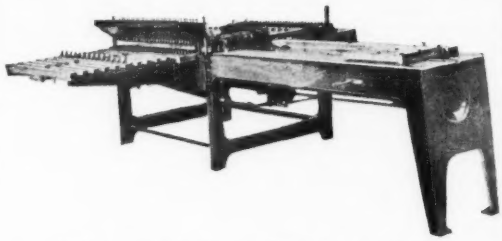
Special Offerings *by* "NEWMAN"

New and Rebuilt Soap Machinery

WE carry a complete line of equipment for the soap and sanitary product industries. All used equipment is rebuilt in our own shops and is guaranteed to be in first class condition. All new equipment that we manufacture, such as crutchers, frames and cutting tables is of the finest material and workmanship. You can buy with confidence from Newman.

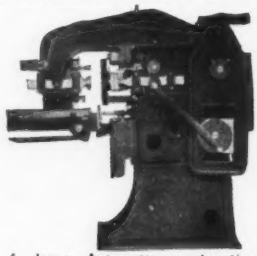
USED SPECIALS

H-A, 1500, 3000, 4000, 5000 lbs. capacity, Steam Jacketed Crutchers.
Dopp Steam Jacketed Crutchers, 1000, 1200, 1500 lbs. and 800 gals. capacity.
Ralston Automatic Soap Presses.
Scouring Soap Presses.
Empire State, Dopp & Crosby Foot Presses.
2, 3, 4, 5 and 6 roll Granite Toilet Soap Mills.
H-A 4 and 5 roll Steel Mills.
H-A Automatic and Hand-Power slabbers.
Proctor & Schwartz Bar Soap Dryers.
Blanchard No. 10-A and No. 14 Soap Powder Mills.
J. H. Day Jaw Soap Crusher.
H-A 6, 8 and 10 inch Single Screw Plodders.
Allbright-Nell 10 inch Plodders.
Filling and Weighing Machines for Flakes, Powders, etc.
Steel Soap frames, all sizes.
Steam Jacketed Soap Remelters.
Automatic Soap Wrapping Machines.
Glycerine Evaporators, Pumps.
Sperry Cast Iron Square Filter Presses, 10, 12, 18, 24, 30 and 36 inch.
Perrin 18 inch Filter Press with Jacketed Plates.
Gedge-Gray Mixers, 25 to 6000 lbs. capacity, with and without Sifter Tops.
Day Grinding and Sifting Machinery.
Schultz-O'Neill Mills.
Day Pony Mixers.
Gardiner Sifter and Mixer.
Proctor & Schwartz large roll Soap Chip Dryers complete.
Doll Steam Jacketed Soap Crutchers, 1000, 1200 and 1350 lbs. capacity.
Day Talcum Powder Mixers.
All types and sizes—Tanks and Kettles.
Ralston and H.A. Automatic Cutting Tables.
Soap Dies for Foot and Automatic Presses.
Broughton Soap Powder Mixers.
Williams Crutcher and Pulverizer.
National Filling and Weighing Machines.



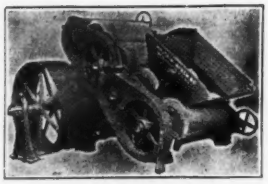
H-A Automatic Power Soap Cutting Table. First-class condition, rebuilt, pulley or direct motor drive.

JONES AUTOMATIC



4 Jones Automatic combination laundry and toilet soap presses. All complete and in perfect condition.

H-A SOAP MILL

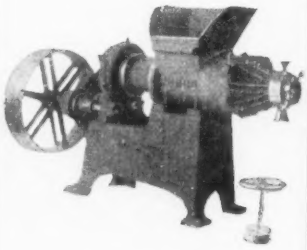


This 4-roll granite toilet soap mill is in A-1 shape. Latest and largest size rolls. Priced for quick sale.

NEW CRUTCHERS!

This Newman brand new, all steel steam jacketed soap crutcher. Will crutch any kind of soap. We also build another crutcher especially adapted for laundry soap in addition to other new soap machinery such as frames, cutting tables, etc. Send for complete list.

SINGLE SCREW SOAP PLODDER



Single screw soap plodders with 6, 8, 10 or 12 inch screws. All completely rebuilt and unconditionally guaranteed.

Send us a list of your surplus equipment—we buy separate units or complete plants.

NEWMAN TALLOW & SOAP MACHINERY COMPANY

1051 W. 35th St., Chicago, Illinois

Our Forty Years' Soap Experience Can Help Solve Your Problems

Classified Advertising

Classified Advertising—All classified advertisements will be charged for at the rate of ten cents per word, $2.00 minimum, except those of individuals seeking employment where the rate is five cents per word, $1.00 minimum. Address all replies to Classified Advertisements with Box Number, care of *Soap*, 254 West 31st St., New York.

Positions Wanted

Salesman—Young man with wide acquaintance among manufacturers of insecticides, disinfectants, waxes, and allied chemical specialties. Desires connection to sell raw materials or containers to these trades. University graduate. Best references. Address Box No. 579, care of *Soap*.

Soap Maker—Man with 15 years' experience in Austrian soap plants making all types of soap products and with ability to handle manufacture complete is willing to start at the bottom in an American plant. Technical education and best of training. Speaks fluent English. Address Box No. 582, care of *Soap*.

Competent Soap-maker and Chemist: Specialist in high grade shampoos, shaving cream, paste- oil-granulated- and textile soaps desires connection with firm in California. At present employed. Owns three patent-applications. Address Box No. 584, care of *Soap*.

Chemist, Ph.D.—Thorough chemical and engineering training. Twelve years executive duties. Extensive experience with disinfectants, antiseptics, detergents, and insecticides. Interested in development and production. Address Box No. 591, care *Soap*.

Experienced Soap Maker wishes to make permanent connection. Able to manufacture Neutral Liquid Soap (without doctoring), also insecticide non-rubbing wax, prepared liquid and paste waxes, metal polishes, etc. Address Box No. 592, care *Soap*.

Sales Service: Soap-chemist well versed in the application and sale of Laundry- Textile- Tanners & Paper-mill- soaps and cleaners is interested in responsible position on Pacific coast. Present employment requiring 3 month notice. Address Box No. 585, care of *Soap*.

Salesman—Young man with several years' experience in the petroleum field desires new connection in sales work for manufacturer of soaps or sanitary specialties where there is a good future. For further details communicate with Box No. 593, care of *Soap*.

Raw Materials and Equipment

NOTE: This is a classified list of the companies which advertise regularly in SOAP. It will aid you in locating advertisements of raw materials, bulk and private brand products, equipment, packaging materials, etc., in which you are particularly interested. Refer to the Index of Advertisements, on page 134 for page numbers. *"Say you saw it in SOAP."*

ALKALIES

American Cyanamid & Chemical Corp.
John A. Chew, Inc.
Columbia Alkali Co.
Diamond Alkali Co.
Dow Chemical Co.
Eastern Industries
Hooker Electrochemical Co.
Innis, Speiden & Co.
Niagara Alkali Co.
Solvay Sales Corp.
Jos. Turner & Co.
Warner Chemical Co.
Welch, Holme & Clark Co.

BULK AND PRIVATE BRAND PRODUCTS

Associated Chemists, Inc. (Insecticides)
Baird & McGuire, Inc. (Disinfectants)
Buckingham Wax Corp. (Wax Products)
Candy & Co. (Floor Products)
Chemical Supply Co. (Disinfectants, etc.)
Clifton Chemical Co. (Sanitary Supplies)
Davies-Young Soap Co. (Potash Soaps)
Empire Chem. Prods. Co. (Sanitary Supplies)
Federal Varnish Co. (Floor Products)
Fuld Bros. (Sanitary Supplies)
Harley Soap Co. (Soap Specialties)
R. M. Hollingshead Corp. (Floor Products)
Hysan Products Co. (Sanitary Supplies)
Koppers Co. (Disinfectants)
Kranich Soap Co. (Potash Soaps)
Peck's Products Co. (Sanitary Supplies)
Philadelphia Quartz Co. (Detergents)
Geo. A. Schmidt & Co. (Soaps)
Shawmut Specialty Co. (Wax Products)
Sweeping Compound Mnfrs. of N. Y. (Floor Products)
Twi-Laq Chemical Co. (Wax Products)
Twin City Shellac Co. (Wax Products)
Uncle Sam Chemical Co. (Sanitary Supplies)
T. F. Washburn Co. (Floor Products)
White Tar Co. (Disinfectants, etc.)
Windsor Wax Co. (Wax Products)

CHEMICALS

American-British Chemical Supplies
American Cyanamid & Chemical Corp.
John A. Chew, Inc.
Columbia Alkali Co.
Diamond Alkali Co.
Dow Chemical Co.
E. I. du Pont de Nemours & Co.
Eastern Industries
General Chemical Co.
General Dyestuffs Corp.
Hooker Electrochemical Co.
Industrial Chemical Sales Div.
Innis, Speiden & Co.
Monsanto Chemical Co.
Niagara Alkali Co.
Philadelphia Quartz Co.
Rohm & Haas Co.
Solvay Sales Corp.
Standard Silicate Co.
Jos. Turner & Co.
Victor Chemical Works
Warner Chemical Co.
Welch, Holme & Clark Co.

COAL TAR RAW MATERIALS

(Cresylic Acid, Tar Acid Oil, etc.)

American-British Chemical Supplies
American Cyanamid & Chemical Corp.
Baird & McGuire, Inc.
Barrett Co.
Innis, Speiden & Co.
Koppers Co.
Monsanto Chemical Co.
Reilly Tar & Chemical Co.
White Tar Co.

COLORS

Fezandie & Sperrle
Pylam Products Co.

CONTAINERS and CLOSURES

American Can Co. (Tin Cans and Steel Pails)
Anchor-Hocking Glass Corp. (Closures & Bottles)
Continental Can Co. (Tin Cans)
National Can Co. (Cans)
Owens-Illinois Glass Co. (Bottles & Closures)
Wilson & Bennett Mfg. Co. (Steel Pails and Drums)

DEODORIZING BLOCK HOLDERS

Clifton Chemical Co.
Fuld Bros.
National Sanitary Chemical Co.

INSECTICIDES, SYNTHETIC

American Cyanamid & Chemical Corp.
Rohm & Haas Co.
Whitmire Research Corp.

MACHINERY

Anthony J. Fries (Soap Dies)
Houchin Machinery Co. (Soap Machinery)
Huber Machine Co. (Soap Machinery)
International Nickel Co. (Monel Metal)
R. A. Jones & Co. (Automatic Soap Presses and Cartoning Machinery)
Karl Kiefer Machine Co. (Filling Machinery)
Koppers Company (Coal Tar Plants, Power Plants, Valves, Castings, Pipe, Tanks)
Mixing Equipment Co. (Tanks, Mixers)
Proctor & Schwartz (Dryers)
C. G. Sargent's Sons Corp. (Dryers)
Sprout, Waldron & Co. (Mixing, Conveying, etc)
Stokes & Smith Co. (Pkg. Machy.)

(*Continued on page* 132)

Positions Open

Salesman: Experienced, with car and a following, selling bulk sanitation and floor treatment chemicals to hospitals, hotels, industries, schools, public buildings, etc. Commission income, permanent position, several new territories. Write fully. Address Box No. 581, care of *Soap*.

Wanted: A chemist with pharmaceutical training to do analytical and compounding work for manufacturer of proprietary remedies, disinfectants and insecticides. Opportunity for right man to advance rapidly. Salary commensurate with qualification and experience. Address Box No. 583, care of *Soap*.

Miscellaneous

Young European soap expert with some capital, thorough knowledge in the manufacture of toilet, laundry, textile, soft and liquid soap, soap flakes and chips, cold process and semi-boiled soaps, is willing to take partnership or preferably to rent an existing plant. Full details first letter. Address Box No. 590, care of *Soap*.

Floor Brushes—We manufacture a very complete line. Catalogue sent upon request. Flour City Brush Company, Minneapolis, Minn., or Pacific Coast Brush Co., Los Angeles, Calif.

Business Wanted: Interested in purchasing small business together with all equipment. Interested in products selling through grocery and drug trades. Give details to Manufacturer Box No. 580, care of *Soap*.

Complete Soap Plant Equipment for Sale: Proctor soap chip dryer; automatic soap press; wrapping machine; 4 roll stone mills; foot press; plodders 6", 8", 10"; soap boiling kettles; 6 knife chipper; two-way cutting table; frames; filter presses; crutchers; mixers; boilers. Stein Equipment Corp., 426 Broome St., New York City.

Wanted: Several Jacketed Kettles, suitable wax, also portable agitator. Private buyer. Moran 3767 93rd Street, Jackson Heights, N. Y., HAvemeyer 9-9194.

For Sale: One "Proctor" 36-inch diameter Soap Chilling Roll, serial No. K276. For quick sale will consider any reasonable offer. Write Topp Oil & Supply Company, Milwaukee, Wisconsin.

For Sale: Part interest in old established soap business. Kettles, automatic filling machines for hand soap and kitchen cleansing powders. Real opportunity. Address Box No. 578, care of *Soap*.

F.T.C. Cites Antiseptic

The Federal Trade Commission has issued a complaint against Van Products Co., New Milford, N. J., makers and distributors of "No-No Germ Control" advertised as "an absolute germicide." The complaint alleges that through statements and implications the company has represented that its product will kill all the germs in the human body, is an absolute contraceptive and that the vapors penetrate the hidden recesses of the body and kill germs that powders and liquids will not reach. The complaint states that the preparation is nothing more than a formaldehyde solution effective as an antiseptic rather than as a germicide.

Exterminators Meet

The Professional Exterminators' Association held a meeting March 30, at the Town Hall, New York. The topic of the evening was a discussion of old-fashioned and modern formulae for making bedbug liquids, together with directions for mixing them. It was announced that discussion of other insects will follow at subsequent meetings.

B. T. Bush Organizes Co.

Burton T. Bush has recently organized B. T. Bush & Co., with offices at 136 Liberty Street, New York. He is well known in the essential oil industry and has been associated for many years with the American aromatic chemical industry. The new company will develop and deal in specialties.

F.T.C. Cites Sayman

T. M. Sayman Products Co., St. Louis, distributor of "Sayman's Vegetable Wonder Soap" has signed a stipulation with the U. S. Federal Trade Commission, to cease representing that the soap is "the best" for infants, that it "differs from all other soaps" and that it is an effective remedy for pimples, blackheads and skin blemishes.

New Fiber Lubricant

Monsanto Chemical Co., St. Louis, has recently announced the development of a new chemical for use in wool processing, in which the chemical dipotassium phosphate, replaces olive oil as a fiber lubricant in the spinning operation. After spinning, it is necessary to wash off the lubricant, and since dipotassium phosphate dissolves readily in water, its use eliminates the necessity of putting the spun yarn through the rigorous soap scouring operation necessary to remove the olive oil.

Pest Control Book

"202 Common Household Pests of the United States," a new book by Dr. Hugo Hartnack, as reported in the January issue of SOAP, contains 320 pages of 7¾ x 5¼, covering in detail the various stages in the life of the many household pests, their method of reproduction, habits, size, etc. Illustrations, of which there are 270, supplement and portray the text matter in an interesting manner.

Raw Material and Equipment Guide

(*Continued from page* 130)

NOTE: This is a classified list of the companies which advertise regularly in SOAP. It will aid you in locating advertisements of raw materials, bulk and private brand products, equipment, packaging materials, etc., in which you are particularly interested. Refer to the Index of Advertisements, on page 134 for page numbers. *"Say you saw it in SOAP."*

MACHINERY, USED

Consolidated Products Co.
Newman Tallow & Soap Machinery Co.

MISCELLANEOUS

American Colloid Co. (Bentonite)
American Standard Mfg. Co. (Wax Applicator)
Anchor-Hocking Glass Corp. (Metal Caps)
Dow Chemical Co. (Germicides, Agricultural Insecticides, Fumigants)
Filtrol Corp. (Filtering Aids)
Garnet Chem. Corp. (Drip Machines)
Hercules Powder Co. (Pine Oil and Rosin)
Industrial Chemical Sales Div. (Decol. carbon, Chalk)
Innis, Speiden & Co. (Fumigants)
Koppers Company (Coal, Coke, Roofing Materials)
Pennsylvania Refining Co. (White Oils)
Pylam Products Co. (Lathering Agent)
S. Schwabacher & Co. (Naphthenic Soaps, White Mineral Oils)

OILS, FATS, AND FATTY ACIDS

Eastern Industries
Independent Mfg. Co.
Industrial Chemical Sales Div.
Leghorn Trading Co.
Murray Oil Products Co.
Newman Tallow & Soap Machinery Co.
Orbis Products Corp. (Stearic Acid)
Wecoline Products Co.
Welch, Holme & Clark Co.

PARADICHLORBENZENE

John A. Chew, Inc.
Dow Chemical Co.
E. I. du Pont de Nemours & Co.
Hooker Electrochemical Co.
Monsanto Chemical Co.
Niagara Alkali Co.
Solvay Sales Corp.
Jos. Turner & Co.

PERFUMING MATERIALS

Amer-British Chemical Supplies
Aromatic Products, Inc.
Compagnie Parento
Dodge & Olcott Co.
Dow Chemical Co.
P. R. Dreyer Inc.
E. I. Du Pont de Nemours & Co.
Felton Chemical Corp.
Firmenich & Co.
Fritzsche Brothers, Inc.
General Drug Co.
Givaudan-Delawanna, Inc.
Magnus, Mabee & Reynard, Inc.
Monsanto Chemical Co.
Norda Essential Oil & Chemical Co.
Orbis Products Corp.
Schimmel & Co.
Ungerer & Co.
Van Ameringen-Haebler, Inc.

PETROLEUM PRODUCTS

Deodorized Insecticide Base, White Oils, Petrolatum, Paraffine, Oils, etc.

Atlantic Refining Co.
Pennsylvania Refining Co.
S. Schwabacher & Co.
L. Sonneborn Sons.

PHOSPHATES

Trisodium, Sodium Pyrophosphate, etc.

American Cyanamid & Chemical Corp.
John A. Chew, Inc.
E. I. du Pont de Nemours & Co.
General Chemical Co.
Monsanto Chemical Works
Victor Chemical Works
Warner Chemical Co.

PYRETHRUM AND DERRIS PRODUCTS

Insect Flowers and Powder, Pyrethrum Extract, Derris Products

Associated Chemists, Inc.
Derris, Inc.
S. B. Penick & Co.
R. J. Prentiss & Co.
McCormick & Co.
McLaughlin, Gormley, King Co.
John Powell & Co.

SILICATES

E. I. du Pont de Nemours & Co.
General Chemical Co.
Philadelphia Quartz Co.
Standard Silicate Co.

SOAP DISPENSERS

Bobrick Mfg. Co.
Clifton Chemical Co.
Fuld Bros.
Garnet Chem. Corp.

SPRAYERS

Breuer Electric Mfg. Co. (Electric)
Dula Mfg. Co. (Steam Vaporizers)
Fumeral Co. (Spraying Systems)
Universal Metal Prods. Co.

WAXES AND GUMS

Carnauba, Shellac, Candelilla, etc.

General Dyestuff Corp. (Waxes)
Innis, Speiden & Co. (Waxes)
Mantrose Corp. (Shellac)
Twin City Shellac Co. (Shellac)

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Every effort is made to keep this index free of errors, but no responsibility is assumed for any omission.

Tale Ends

NOW that business is all reassured again that it will not, in the near future at least, receive another clip behind the ear from Washington, it can go right ahead and open things up and expand production facilities. All it has to do after that is to sell the goods at a profit,—and we will be back again in the land of honey and roses. Simple?

* * *

Even the World's Fair is having bug troubles at this early date. We are told that the contract for exterminating work at the Fair Grounds has already been cancelled,—and the reason given for the cancellation is that one of the firms selected played too energetically the old exterminator's trick of giving undue publicity to its World's Fair contract. They even imposed on SOAP to the point of having us print a list of "approved" concerns, with the obvious implication that other firms might not be eligible to do work at the fair. (They are, of course.) Well, the Fair officials didn't take kindly to their high pressure publicity campaign, and they lost the biz.

* * *

Keep your eyes open for your copy of the 1939 *Blue Book* which should be along presently,—that is, if your subscription to *Soap & Sanitary Chemicals* is paid up. If not, better rush in that check now,—and we will see that you receive a copy of the biggest and best *Blue Book* yet published. The *Blue Book* is sent free each year *only* to regular paid subscribers to *Soap & Sanitary Chemicals.*

* * *

With the excise tax on most imported oils and fats at present approximating about one hundred per cent, we have often wondered how the dairy and cotton oil people had the nerve to ask Congress for an increase in these taxes of some sixty-six per cent. We suppose that they go on the supposition that you can't be shot for trying.